75 MPH! FASTEST NITRO SEDAN YOU CAN BUY! page 94

SAVE YOUR ENGINE! PAGE 150

RADIO CONTROL car action

THE WORLD'S BEST-SELLING RC CAR MAGAZINE

BIG POWER small price

Traxxas SportMaxx

ROCK & ROLL RADIOS

AIRTRONICS MX-3

JR RACING XR3i

POWER PLAY

4 new motors dyno tested

GET SIDEWAYS!

RC drifting—we show you how

TESTED

OFNA 9.5 MBX RTR

SCHUMACHER Nitro Fusion

TAMIYA Integra Type R XB Pro

AirAGE PUBLISHING

FEBRUARY 2003

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VOLUME 18
NUMBER 2
FEBRUARY 2003

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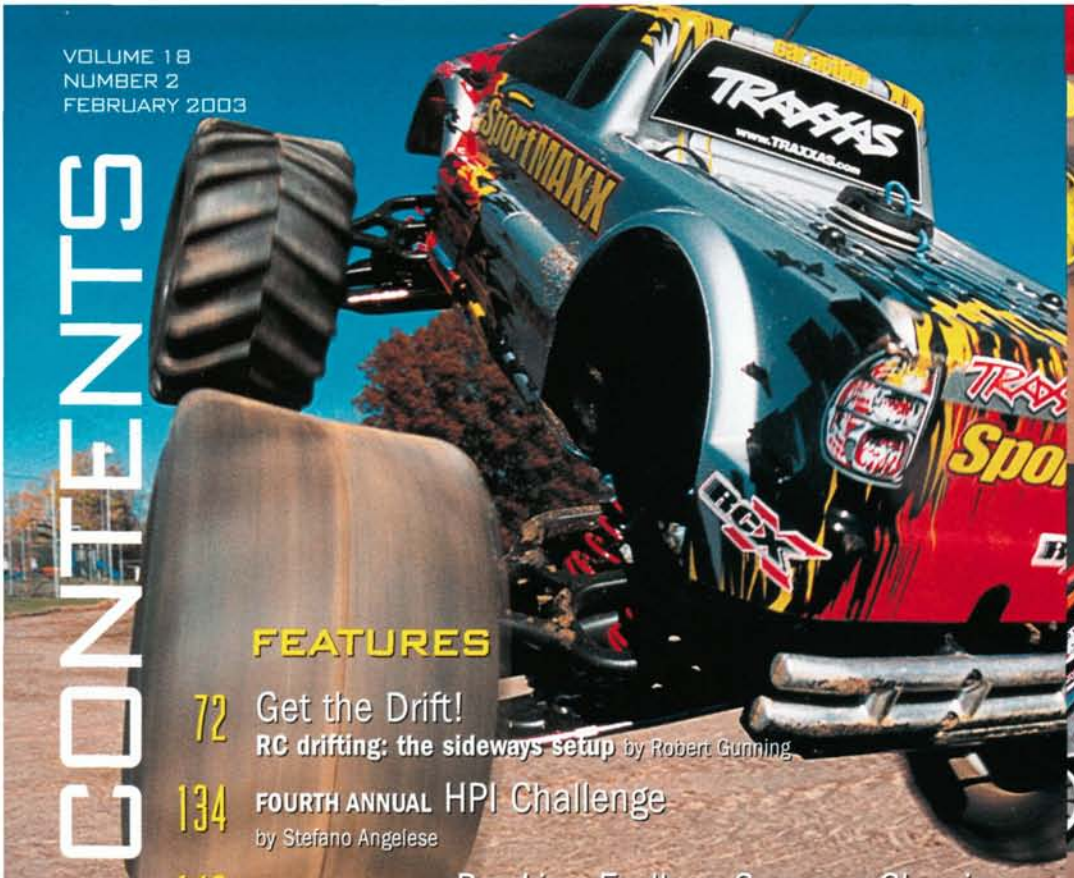

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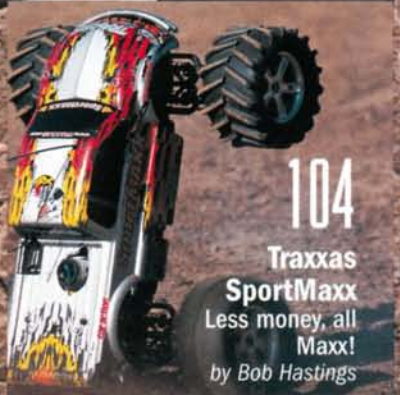

COLUMNS

DEPARTMENTS

RESOURCES

ON THE COVER: the Traxxas SportMaxx meets the mud. Pete Hall manned the Nikon F5, Bob Hastings drove, and Mother Nature provided the mud.

Is there such a thing as *too* fast?

We all crave speed. That's why we buy hotter motors and more powerful engines, install ball bearings and 2-speed transmissions and drag race each other in parking lots. Having the fastest car is the ultimate RC bragging right; it's nice to have the lightest car, or the most expensive, or the best looking, but the ability to leave 'em all in the dust is what we really want. While this (dare I say it?) *need for speed* is present in all of us, it's especially rabid in the churning imaginations of first-time nitro RC drivers. How fast does it go? That is the question (as excerpted from Shakespeare's Radio Control Hamlet).

The marketing guys at Traxxas knew this when they decided to put "50 mph!" on the Nitro 4-TEC's box for its release as a ready-to-run. How fast does it go? It goes 50. Even though no other company had a speed on its cars' boxes for comparison, the 4-TEC's message was clear: "I'm the fastest." DuraTrax followed suit with the Street Force, which also claimed 50mph, and now Traxxas is ready to release a revised 4-TEC that has the new TRX 2.5 engine and a claimed top speed of 60-plus. That's fast enough for anyone, right?

Right. But if you could go even faster, wouldn't you? Schumacher is betting "Yes" with its Nitro Fusion (track-tested this month, page 94). It's the first 1/10-scale touring car to carry a big-block engine into battle; a feature that lends considerable credence to Schumacher's claim of 80mph for the 3-speed super-car. Eighty. That's license-and-registration-please speed. Is it too fast for RC? No. Too fast for you? Maybe. When you've got a piece of hardware that weighs 3 pounds and can surpass 50, 60, or 70mph, the phrase "serious fun" becomes quite literal. At the very least, you don't want to wad your car. A 60mph direct hit with something hard and immobile doesn't just break a suspension arm or steering hub; it wipes out everything between the body posts. More important, you don't want to damage someone else's property (people generally don't like it when you wreck their stuff), and you certainly don't want to drive into someone's foot (or your own!) at a velocity that's generally reserved for cars you can actually sit in.

This month's message is simple: be smart. Keep those radio batteries fresh, range-check your gear, and always run a throttle-return spring or fail-safe. Don't play in traffic, don't chase the neighborhood pets, and don't play "Betcha can't drive it between my legs." Let's all be as safe as we can be, so we can all go as fast as we want.

Peter Vieira, Executive Editor

RC GONE WILD!

SEND US YOUR VIDEOS

If you've captured your own brand of RC action on video, we want to see it! We're looking for your highest jumps, longest roosts, best (or worst!) crashes and any other type of wild RC action that you've managed to get on tape. Show us your best stuff, and you just might see your car or truck in the next RCX DVD! Send your VHS, 8mm, or Hi-8 videos to:

Air Age Publishing
Attention: Reader Video
100 East Ridge
Ridgefield, CT 06877

All submissions become the property of Air Age Publishing and may be used for RCX video productions or other promotions.

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YOU PICK 'EM

I've had a Tamiya QD Sports for almost a year, and it has served me well. Now I would like to get into nitro. The HPI cars seem pretty good for beginners. I'm considering the Nitro RS4 RTR 3, but I'm not an expert on choosing the right stuff for me. Would the RS4 be a good place to start or can you suggest better alternatives? [email]

Daniel Elliott

I think the Nitro RS4 3 is a great car; I have the Type SS version myself. There are other alternatives, but whether or not they're better is up to you. Associated's Nitro TC3 RTR is excellent, and I look forward to checking out the revised Traxxas Nitro 4-TEC, which will include the TRX 2.5 engine. Not to mention Hot Bodies' soon-to-be-released Tornado and the cars from Kyosho, Mugen, OFNA ... good luck making that pick! Instead of choosing one for you, I suggest that you shop by price (you know what you can afford) and shop support. If you select a car that's well known to the crew at the hobby shop and it's well supported with in-stock replacement parts, you're guaranteed to have a great time getting into nitro.

—Pete

HE BLINDED ME WITH SCIENCE

In a recent "Troubleshooting" article, someone wrote in about a problem with broken screws, and part of the suggestion to help avoid the problem was to use high-quality hardened-steel or titanium screws in aluminum parts. I don't know whether you are aware of this, but titanium and aluminum develop an unusual property when combined. These metals can fuse or "cold weld" over a relatively short time when brought into contact with each other. I discovered this through my experience in the bicycle industry in which aluminum and titanium are very popular metals for much the same reasons as they are used in the RC industry—maximum strength and minimum weight.

A product called "Ti-Prep" has been designed to create a barrier between the two metals, and it greatly reduces the chance of a bond occurring. Given the proliferation of aluminum parts in the RC industry, it's a good idea to enlighten people about this potential problem and let them know there are ways to avoid it if they use titanium with aluminum. I strongly recommend the use of steel screws with aluminum and titanium screws with titanium, if strength is the requirement. [email]

Michael Lynch

Wow, you're really taking me back to my bike-shop days (YesterYear Cyclery, New Bedford, MA—yo!). About once a month, a customer would roll in with an aluminum seat post that had welded itself into a chromoly frame because of the galvanic reaction between the two metals—exactly the type of reaction you describe. Many combinations of metals produce this type of electro-chemical corrosion. The anti-seize lubricant you mentioned, Finish Line Ti-Prep, is good stuff; you can also use plain old grease to do the same job. If you use thread-locking fluid to prevent screws from loosening, it will also act as a barrier against a galvanic reaction. Thanks for the heads up!

—Pete

NO MOTOR LIMIT ON A LIMITED BUDGET

I bought a used Team Losi Double-X4 with a lot of graphite parts and a 9-turn motor. Which kind of no-limit ESC would be best for it? The people at the hobby shop said they cost about $130; that is about $40 too much for me. I also need to know which type of receiver and transmitter would be best for the car. I planned to use my old Traxxas radio, but my Dad said that I would need to buy a new one for my Losi. [email]

Jason Littlejohn

You can use your old Traxxas system, but the receiver will be a tight fit in the chassis. Are you totally hung up on that 9-turn motor? It would be cheaper to buy a milder motor and a less expensive ESC. But if you just gotta have crazy-fast modified power, some less expensive ESC options that can handle your motor include the LRP IPC Pro Sport ($100), the Novak Dually ($100) and the DuraTrax IntelliSpeed 8T Racing ($95). Actual prices vary with dealer, but you get the idea.

—Pete

COOL KID

I just want to thank you guys for making this magazine. It has helped me ever since I got into RC cars at age 7; I'm 13 now. The first car I picked out was because of your magazine. I decided on the Team Associated RC10 buggy; it was the "Car of the Year" then. I now have a Losi Triple-X and a Traxxas E-Maxx that I race at SoCal Raceway regularly.

I have interested two of my friends in RC, too; one has a Traxxas Stampede, and the other has a Rustler. Thanks to your magazine, I have been able to fix their cars whenever they have broken, and I helped them upgrade their trucks. I can't thank you guys enough for your help. Without your magazine, I would have left the hobby a long time ago. [email]
Jeff Peck

Now, now, I'm sure you'd still be in RC even without *RC Car Action*. But I think it's safe to say that your buddies probably wouldn't have stayed in the hobby without you. Thanks for being one of the cool kids.
—*Pete*

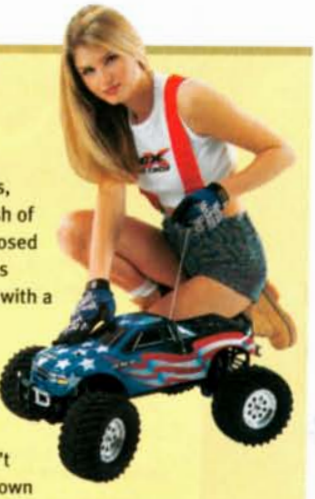
FREQUENCY FLYER

After I read the December 2002 issue, I wondered whether any company makes a crystal-less RF module for Futaba radios—specifically, the 3PJS. I love my radio and its features, and I really don't want to get a new one. I'm tired of having to wait at the track for another driver who is on one of the frequencies I am on (I have five sets of crystals) to bring the clip back. Believe it or not, this happens a lot.
Brad Szczypkowski
Westmont, IL

There are currently no crystal-free RF modules for the 3PJS (Novak, are you working on this? C'mon!). For now, the best you can do is buy a Novak XXtra receiver so you'll at least be able to get rid of your receiver crystals, but you'll still be stuck with "only" five frequencies unless you buy even more transmitter crystals. Maybe it's time for the track operators to firm up the rules on the frequency clips; it sound as if you have a lot of clip hogs who are taking the clips back to the pits. I can't stand those guys.
—*Pete*

YOU SAID IT

"Thanks for taking the girl-next-door approach"



I share my love of RC and *Radio Control Car Action* with my two sons, ages 14 and 16. I readily acknowledge that I might find a secret stash of *Playboys* one day, but I do try to police how much skin they are exposed to in the movies they rent, the websites they visit and the magazines they read. I was a little concerned when I saw "Lust List," complete with a curvy cover girl, on the front of your January issue, but I was very pleased to see the approach you took in the article. I have left plenty of motorcycle and truck magazines on the newsstand because they seem to think the only way to show a pretty girl is in a wet T-shirt. Thanks for taking the "girl-next-door" approach, as opposed to the "porn-star-next-door" approach. And your model isn't just a pretty face; she is apparently a savvy racer who works on her own cars (hence the toolbelt) and is careful to wear gloves when pitting for nitro cars!
—Michael Burns

Thanks for the great letter! Let's talk about a different kind of curvaceous body. Which Trinity Reference shell can I send you?
—*Pete*

Each month, "Readers Write" sponsor Team Trinity awards the "You said it" letter writer the Reference body of his choice. This is Trinity's Wasp for the Kyosho Inferno MP-7.5.

WRITE TO US! We welcome your photos, drawings, comments and suggestions. Letters should be addressed to "Letters," Air Age Inc., *Radio Control Car Action*, 100 East Ridge, Ridgefield, CT 06877-4606 USA. Letters may be edited for clarity and brevity, and each must include a full name and address or telephone number so that the identity of the sender can be verified. We regret that, owing to the tremendous numbers of letters we receive, we can't respond to every one.

- Peter Vieira: peterv@airage.com
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POSSESS Power

PROPHET SERIES
PEAK PREDICTION CHARGERS

Prophet Pro™

VISION SERIES
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Vision Peak Plus™

HORIZON HOBBY

THE of Dynamite

What kind of charger do you want? Versatile? Fast? AC, DC or both? Just the basics or a top-of-the-line with with peak prediction and adjustable rates? No problem, we've got it.

Mega Dual-E™

Dynamite® has the broadest and most dependable collection of chargers around. The AC/DC-powered **Mega series** are extremely versatile and perfect for entry-level modelers, culminating in the handy Dual-E, which can quickly charge two 1500mAh sport packs simultaneously. The **Vision series** peak detection chargers stop charging the moment the battery reaches its limit. The Vision Peak's sophisticated IC circuitry lets you monitor charge status using five easy-to-read LED indicators, while the Vision Peak Plus™ adds "smart" charging which automatically differentiates between Ni-Cd and Ni-MH packs and adjusts accordingly. The new **Prophet series** is the result of advanced peak prediction circuitry that calculates exactly when a 100% charge will occur and stops fast-charging at exactly that point. The flexible Prophet Plus™ charges nearly everything from 600mAh receiver packs to 3000mAh Ni-MH car packs at three charge rates.

And when it comes to batteries,

Dynamite has an equally comprehensive line, whether you're into sport or competition, hump or pack, 6 or 7 cells. From the economy-priced Dyna-Sport™ Ni-Cd series for entry-level drivers to the long-running, high-capacity 3000mAh Ni-MH packs to dependable receiver packs, Dynamite has the variety you want and the quality you need.

DYNAMITE HAS 3 LINES OF PERFORMANCE CHARGERS

	POWER	PEAK	CELLS	CHARGE RATE	VOLTMETER	AMP METER	TRICKLE	CURRENT DISCHARGE
Mega 1™	AC/DC	N	6–7	4A	Taps	N	Y	N
Mega 2™	AC/DC	N	6–7	4A	Taps	Y	Y	Y
Mega 3™	AC/DC	N	4–8	0.1–4A	Taps	Y	Y	Y
Mega Dual-E™	AC/DC	N	6x2	3.5A	Taps	N	Y	N
Mega Peak™	AC/DC	Y	4–7	1A/4A	N	N	Y	N
Vision Peak™	AC/DC	Y	6–7	2A/4A	Taps	N	Y	N
Vision Peak Plus™	AC/DC	Y	5–7	1A/4A	LCD	LCD	Y	N
Prophet™	DC	Y	6–7	4A	N	N	Y	N
Prophet Plus™	AC/DC	Y	4–7	1A/2A/4A	Taps	N	Y	N
Prophet Pro™	DC	Y	4–7	0.1A–5A	N	LED	Y	N

MEGA SERIES™ VISION SERIES™ PROPHET SERIES™

DYNAMITE

BY PETER VIEIRA

CAN COOLER

TRINITY Motor Kooling Station

Between the heat-sink effect of its aluminum construction and the constant stream of air that pumps up through the bottom-mounted fan, Trinity's Motor Kooler should do a fine job of bringing your flaming-hot motor back to room temperature after each round. You can also use it to cool your McNuggets and fries, if they're too hot. Like that ever happens.
Trinity Products (732) 635-1600; teamtrinity.com.

GOLDEN HORIZONS

Machined-aluminum parts for Tamiya Terra Crusher

Golden Horizons has been hogging out a lot of aluminum lately, and now those guys have a full line of genuine, machined-from-billet 6061 T6 parts for Tamiya's biggest rig. Silver- and blue-anodized finishes are available, and as you can see, the stuff looks beautiful. Upper and lower arms, steering knuckles, C-carriers, bulkheads and a gorgeous heat-sink head with removable cap are a few of the highlights.
Golden Horizons (604) 331-2526; ghhobby.com.

REEDY

Rated-X 3000mAh matched stick packs and GP3300 NiMH matched cells

High-performance stick-pack fans will be psyched to see Reedy's new "X-Rated" 3000mAh packs, which combine the latest NiMH cells with clear "shotgun" tubes (so you can see the numbers) and the usual flexible, silicone wire and Tamiya connector. You can get the X-Rated packs with Sanyo 3000HV cells or Panasonic Stock-Metal Hydrides; either way, you'll have a stick pack of cells that have been given the same cycling/matching/voltage-enhancing treatment as Reedy's best pro packs ... like these new GP3300 cells, for example. Reedy is the latest to match the GP3300 super-cells, and you can get them and 4- and 6-cell unassembled packs.
Reedy, a division of Team Associated (714) 850-9342; teamassociated.com.

Rat Race

RATZAS Rat Racer Chassis for Micro RS4

You'll just have to take my word for it: this car did indeed begin life as an HPI Micro RS4! RatZas' Rat Racer chassis and hop-up parts can transform your Micro into a fully adjustable, pan-car-style racing machine. The graphite and aluminum parts are perfectly finished, and all the required hardware is included. You can pick up a complete chassis kit, or buy the individual components separately. RatZas also offers the "Rat Zapped" cells that you see strapped into the chassis.

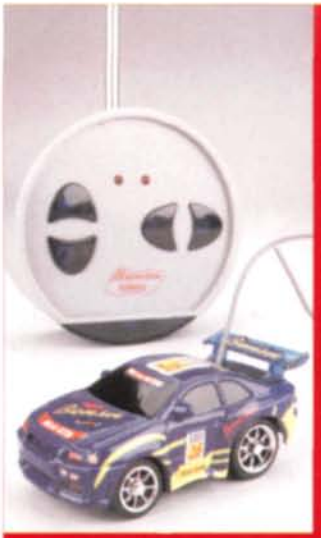
RatZas Performance RC Racing Designs (321) 438-0480; ratzas.net.

TRINITY 1600mAh Spec2K pack

Street Spec fans, Legends drivers and cost-controlled racers of all types can stretch their qualifiers a little longer or run hotter motors (like Chameleon 2s, for example) now that Trinity has super-sized its Spec packs to 1600mAh. The cells are visible to make tech'ing easy, and the packs are available in both 4- and 6-cell versions with Tamiya connectors. Not racing? Spec packs are great for just playin' around, too.

Trinity Products (732) 635-1600; teamtrinity.com.

SPEC-TACULAR



Car under GLASS

MINI RC CAR

Diner-donut-display technology comes to RC with the Mini RC Car! The Mini's base doubles as the transmitter, and provides toggle-style left/right, forward/reverse control. Like other 1/60-ish scale ultra-micro cars, the Mini RC clips onto the transmitter for 45 seconds of charging for each 3- to 5-minute run. According to the guys at minirccar.com (where you can buy direct, by the way), this is the official, original Mini RC Car.

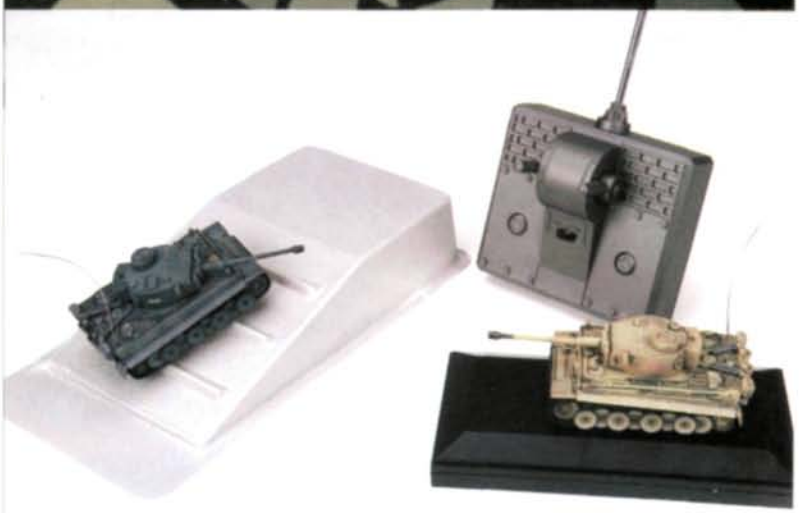
Mini RC Car; minirccar.com.

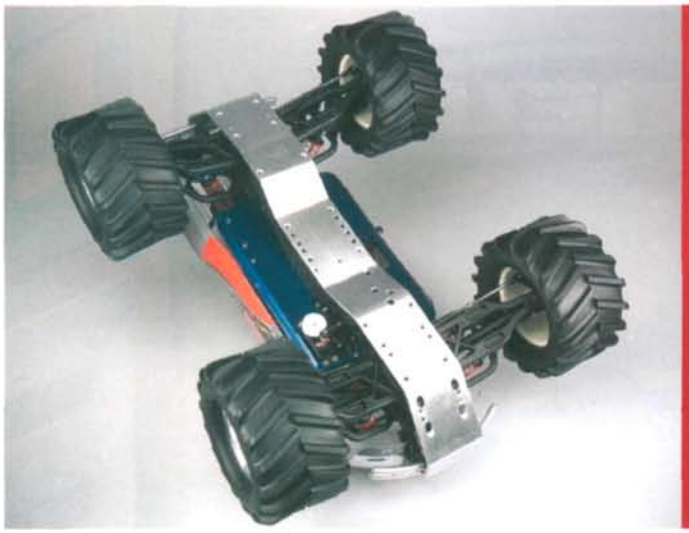
DRAGON MODELS

Micro Tech RC Armor Tiger I

Dragon offers two versions of its tiny Tiger; the tan model is painted and weathered to match the tanks that fought in Sicily in July 1943, and the gray version wears Eastern Front colors from March 1943 (the Dragon guys take this stuff seriously!). The two-stick transmitter gets a dose of military style, too, and the 1/72-scale rubber-tracked tanks even come with plastic terrain to conquer. The display base doubles as a charger, and it takes just five minutes to fuel the tank for 15 minutes of maneuvers. The tanks are available on 49 and 27mHz frequencies, so two tanks can terrorize the cat at one time.

Dragon Models distributed by Mikerian Mercantile Ltd. (780) 436-2854; mikerian.com.





DEEP IMPACT

IMPACT PERFORMANCE PRODUCTS
Skidmaxx

This healthy hunk of aluminum gives your Traxxas Maxx one-piece protection against rocks, roots and anything else it might slam into. Install the Skidmaxx over the existing skidplates; it includes all the required hardware. With 3mm of aluminum between the chassis and anything that might damage it, your Maxx will be just about break-proof.

Impact Performance Products (661) 663-0894; toys4millard@bak.rr.com.

BUDGET BLASTER

SMART TECH Monster Truck

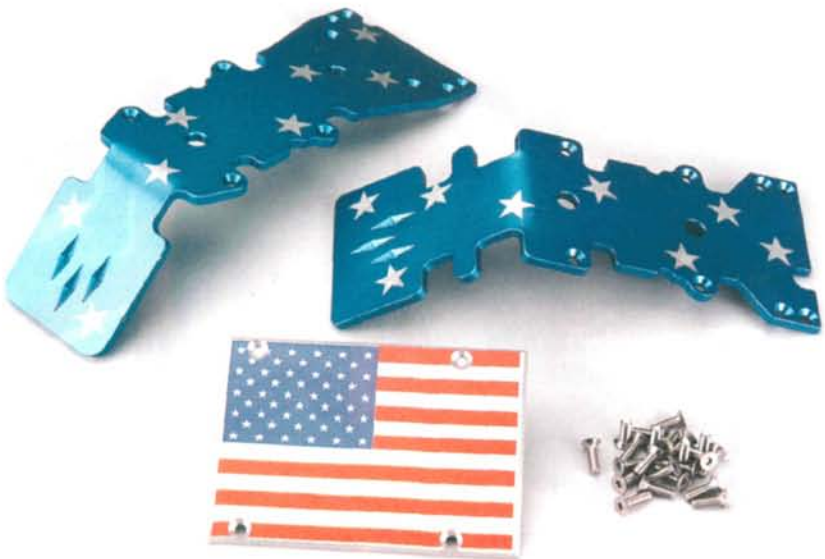
Smart Tech is new on the RC scene, and it's looking to make a name for itself as the low-price/lots of features leader, and this truck shows it: the fuel bottle, glow-starter and charger, batteries and a four-way wrench are included with the RTR machine, which also has a pull-start .15 engine, 2-speed transmission and 8-shock independent suspension. The vintage-style body is available in the red-and-flame look you see here plus two other factory-painted, trimmed and mounted body styles. Now, the price: SmartTech plans that this ride will roll into shops at about half the price of similarly equipped RTR trucks. Half!

Smart Tech by Excel Hobby (516) 728-2883 excelhobby.com.

PROMAX Activator Sport Peak Charger

The ProMax Activator Sport might set a new standard for inexpensive peak chargers; check these specs and take a guess at the price. In addition to AC/DC operation, the all-digital Sport lets you adjust the charge rate (0.1 to 4 amps) and can charge 4- to 8-cell NiMH and Ni-Cd packs. An internal fan cools the charger, and an LCD display shows voltage, amps, number and type of cells and charge time. The Sport even stores peak voltage and charge time to help you track your pack's performance. According to Global, the Activator Sport will sell for $75 or less. That's a deal.

ProMax; distributed by Global Hobby Distributors (714) 964-0827; globalhobby.com.



Patriotic Plates

FULL FORCE RC
Stars and Stripes skidplate set

Now you can show your patriotic fervor by proudly mounting Old Glory underneath your Traxxas Maxx and, uh, dragging it through the mud. Irony aside, Full Force's crisply anodized American flag center skidplate and star-spangled front and rear skids will give your Maxx machine a one-of-a-kind look, while you do a little flag waving. Nothing wrong with that; no sir.

Full Force RC; fullforcerc.com.

BLACK BEAUTY

HPI RS4 RTR 3 Lamborghini Murcielago

If HPI's Super Nitro RS4 Lambo is too big for you, you'll be happy to see that the nitro RS4 RTR 3 is now available with the same skin. There's a lot of performance to go with the perfectly captured Murcielago lines, since the Nitro 3 includes HPI's latest Nitro Star .15FE engine with improved cooling head and tuned pipe. Shaft drive, full bearings, quick-release radio tray and Airtronics-built TX-2 radio gear are also standard. You can read all about it in the June 2002 issue, in which we track-tested the Nitro RS4 RTR 3 in Dodge Viper trim.

HPI Racing (949) 753-1099; hpiracing.com.

SPEEDMIND Deluxe Bags

Are you still making 80 trips between the trunk of your car and the workshop to load your stuff every Sunday? Get with the program and buy a decent RC bag! SpeedMind has just what you need with these two-box and three-box bags. There's plenty of room for your lathe, power supply, spare tires, setup board, radios, etc., and the padded nylon shell keeps everything safe and sound. Pull-straps on the internal boxes make it easy to yank them out of the bag, and a large interior pocket provides extra storage.

SpeedMind distributed by Magma Intl. (905) 886-1808; magmarc.com; speedmind.ca.

IT'S OFFICIAL!

NOVAK Super Sport Brushless Debut

SoCal Raceway in Huntington Beach, CA, hosted the official introduction of Novak's Super Sport brushless motor and ESC system. New West Coast assistant editor Jason Sams had a chance to drive a sedan with the new system and was impressed: "The powerband is really smooth, and the system allowed the car to coast for the better half of a straightaway." J-Lo was also impressed by its efficiency: "The motor was never hot, even when I geared it to the moon." The Super Sport system will be in hobby shops by the middle of December, and a full review is on the way.

Novak Electronics Inc. (949) 833-8873; teamnovak.com. ■

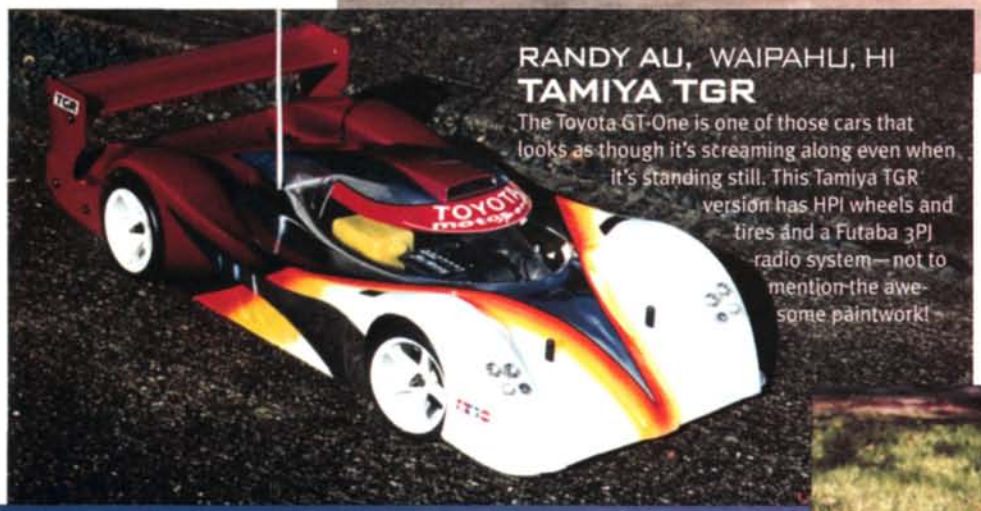
readers' rides

YOUR BEST BUILDS

BY BOB HASTINGS

JHON DEL MUNDO
WINNETICA, CA
TRAXXAS NITRO 4-TEC

Don't think that this bad-looking BMW is a display-only car. Jhon has owned this Nitro 4-TEC for a few years, and he runs it every weekend. The touring car is outfitted with an HPI body and X-pattern radial tires, and finished off with a set of RPM rims.



RANDY AU, WAIPAHU, HI
TAMIYA TGR

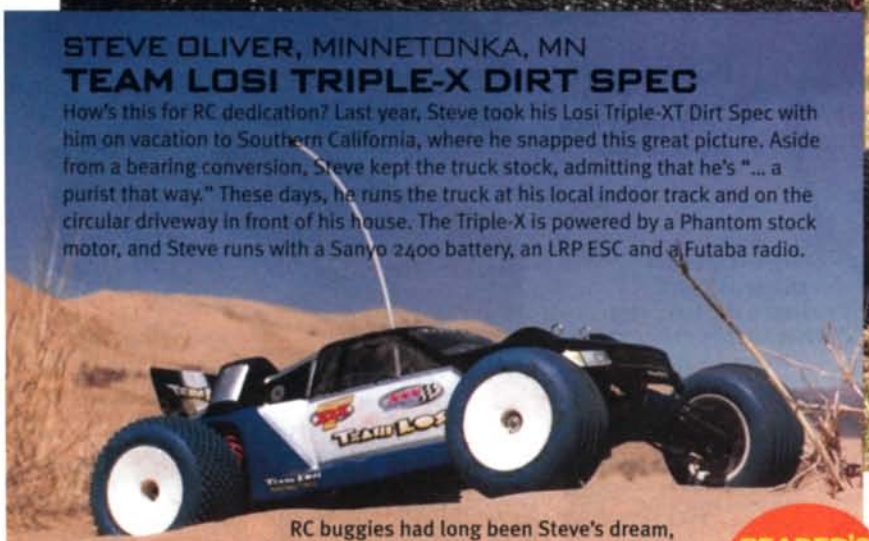
The Toyota GT-One is one of those cars that looks as though it's screaming along even when it's standing still. This Tamiya TGR version has HPI wheels and tires and a Futaba 3PJ radio system—not to mention the awe-some paintwork!

KEITH HARRIS
SCOTIA, NY
TRAXXAS T-MAXX

Wouldn't it be great if they could stay this clean forever? Keith sent this picture of his flamed T-Maxx "before any crashing, rolling, folding, spindling or mutilating took place." This purple monster features a Megatech engine, an RRP steel spur and a Hitec 645MG steering servo. Keith taste-fully installed RPM Monster Clawz rims, suspension components, chrome bumpers, and he finished off the Maxx with a Pro-Line Early '50s body and Bow Tie tires.

STEVE OLIVER, MINNETONKA, MN
TEAM LOSI TRIPLE-X DIRT SPEC

How's this for RC dedication? Last year, Steve took his Losi Triple-XT Dirt Spec with him on vacation to Southern California, where he snapped this great picture. Aside from a bearing conversion, Steve kept the truck stock, admitting that he's "... a purist that way." These days, he runs the truck at his local indoor track and on the circular driveway in front of his house. The Triple-X is powered by a Phantom stock motor, and Steve runs with a Sanyo 2400 battery, an LRP ESC and a Futaba radio.



RC buggies had long been Steve's dream, and one that he fulfilled at the age of 32. The truck represents many firsts: first kit, first paint job and the first person we've heard of who loves the smell of the blue Spec tires. Steve looks forward to getting his kids involved in RC, and he plans to add a few buggies and on-road vehicles to his collection.

READER'S RIDE OF THE MONTH

WIN A ONE-YEAR SUBSCRIPTION TO *RADIO CONTROL CAR ACTION* MAGAZINE!

Send a sharp, uncluttered, well-exposed color photo of your vehicle (no Polaroids) and a brief description to "Readers' Rides," *RC Car Action*, 100 East Ridge, Ridgefield, CT 06877-4606 USA. If we publish your photo, you'll receive a free, one-year subscription to *RC Car Action* and will be eligible to win the "Reader's Ride of the Year Contest." Write your address and phone number on your letter and on the back of every photo you send. Good luck!

BOBBY WILKINSON, NEWALLA, OK

HPI NITRO RS4

Bobby's Honda shows off a unique application of DupliColor's new Metalcast paint. The 2-stage paint is normally backed with a bright silver to simulate the look of anodized metal. Instead, Bobby left the body alone after applying three coats of the translucent paint for the look that you see here. He says that the secret to getting the ghostly look is to apply a light coat, another medium coat and then a heavy one, letting the paint dry between coats. After 12 hours, you get this cool look; the paint also comes in red and blue.

TAYLOR MOSELEY
BUFORD, GA

HPI NITRO RUSH

This Rush takes on a cool new look courtesy of the green and white HPI Silverado body. The stadium truck is outfitted with a graphite rear shock tower, aluminum rear brace, RPM Talonz rims and Pro-Line treads. Taylor monitors his O.S. .12CV's temperature with an MIP onboard temp gauge.

BRENT ANSTETT, MEDFORD, OR
TEAM LOSI TRIPLE-X

If you like a mixed-theme scheme (and not just because it rhymes), then Brent's buggy is a home run. The flamed, checkered and striped off-road machine features lots of Losi graphite and is powered by a P2k2 Pro motor. The paint credit goes to J. A. Custom Bodies.

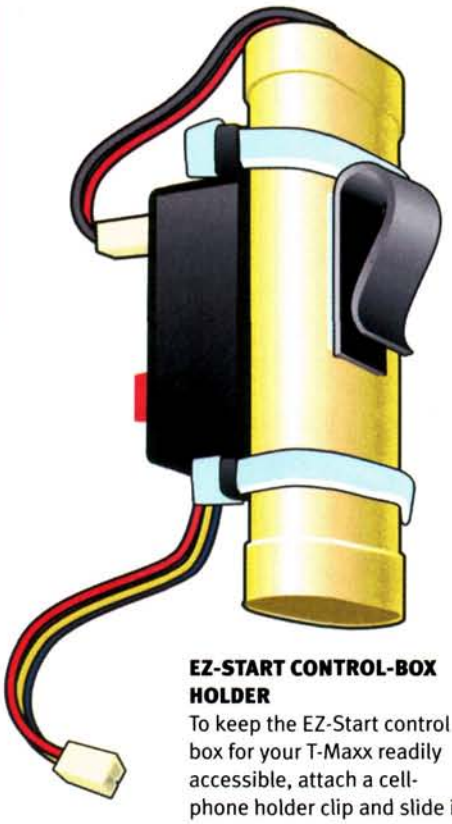
HENRY YANG, SAN JOSE, CA
TAMIYA MITSUBISHI LANCER

For scale authenticity, there's nothing like a Tamiya body, and Henry's Mitsubishi Lancer is an excellent example. Since he purchased the kit, he has added all of the available Tamiya hop-ups, an LRP F1 reversing ESC and a Team Orion 19x3 motor. ■

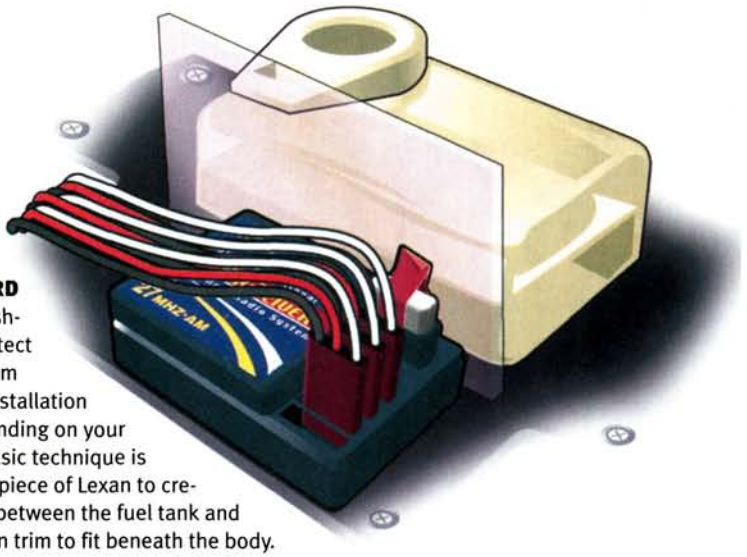
SPONSORED BY OFNA Picco

HINTS, TRICKS, TIPS AND IDEAS FROM READERS LIKE YOU

ILLUSTRATIONS BY DAVID BAKER

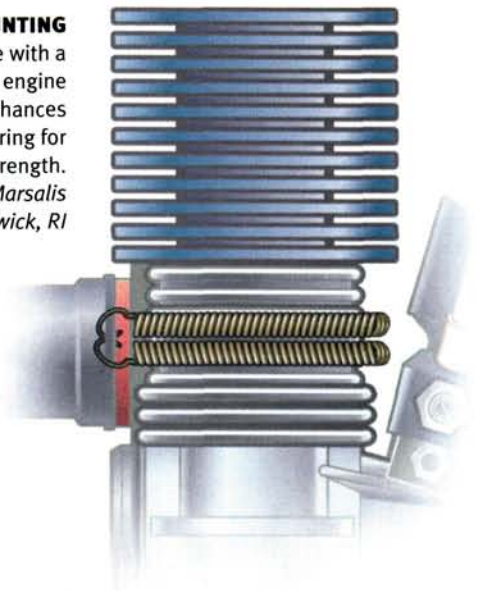


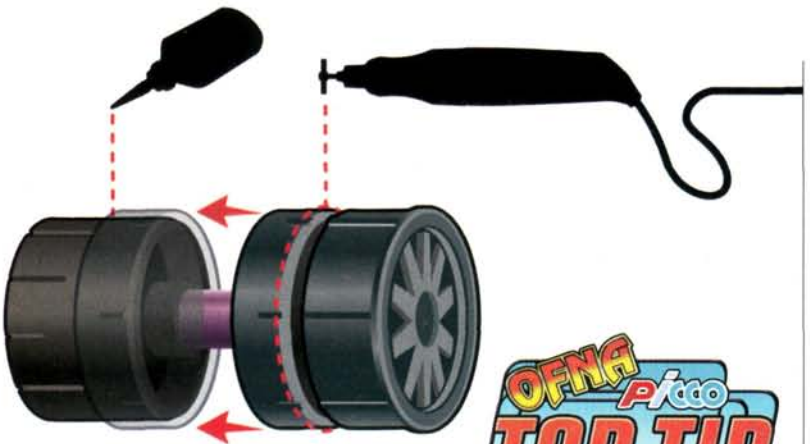
EZ-START CONTROL-BOX HOLDER
To keep the EZ-Start control box for your T-Maxx readily accessible, attach a cell-phone holder clip and slide it onto your belt. [email]
Cal Hanner



FUEL SPLASHGUARD
A simple splash-guard can protect electronics from spilled fuel. Installation will vary depending on your car, but the basic technique is simple. Use a piece of Lexan to create a "fence" between the fuel tank and radio tray, then trim to fit beneath the body.
David Martin
Temecula, CA

IMPROVED EXHAUST-HEADER MOUNTING
Exhaust headers that are held in place with a single spring sometimes slide off the engine during a hard impact. To reduce the chances of this happening, install a second spring for double the holding strength.
Samuel Marsalis
Warwick, RI





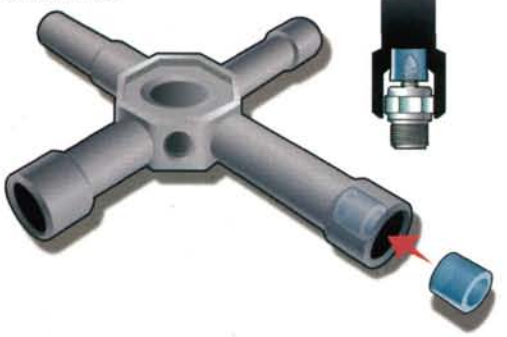
OFNA Picco TOP TIP

FIXED-WIDTH SETTING FOR MICRO RS4
When racing a Micro RS4, the stock wheels can lose their width settings in side collisions. To avoid this, push a spare wheel backward onto the hub to the width setting you want, then CA the wheel to the hub and cut off the excess material with a cutoff wheel.
Burton Hooker
Mililani, HI

SPONSORED BY OFNA Picco

GLOW-PLUG GRIP

To prevent glow plugs from falling out of your glow-plug wrench, force a short piece of fuel tubing into the end of the wrench. The fuel tubing will grip the glow-plug post and hold it in place. [email]
Drew McDonald



EASY DECAL REMOVAL

To give your car's body a new look, change its decals. To remove the unwanted decals, warm them with a hair dryer, and you'll be able to easily pull them off.
Glen Anderson
Berwick, PA

DUMMY BATTERY CELLS

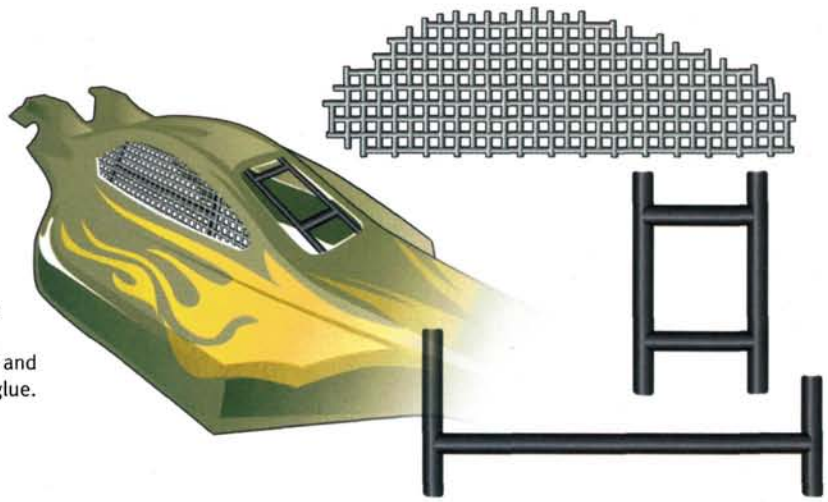
If your car has extra battery slots, you can use "dummy cells" to fill them and help prevent the pack from moving. Cut some Easy Felt into 1.5x12-inch strips, roll it up, and then glue down the end so it stays rolled. Last, cover the dummy cells with single-cell shrink-wrap.
Richard Burgess
Toms River, NJ

RECYCLED BODY FLASHING

If you have a Tamiya body with a printed carbon-fiber finish, save the waste Lexan when you cut out the body; you can use the pieces to make wing dams and other detail parts.
Bobby Hudson
Stead, NV

OFF-ROAD REALISM

To make scale-looking window screens and roll bars for your off-road vehicles, cut out the front windshield, then cut some wire window screen slightly larger than the window opening. To simulate roll bars, trim plastic parts-tree scraps to the size and shape you like. Secure the screen and roll bars with silicone glue.
Craig Hayes
Baltimore, MD



"Pit Tips" are submitted by readers and are screened for functionality, feasibility and safety but are not tested by *Radio Control Car Action*. *Radio Control Car Action* and the submitting authors are not responsible for personal injury or damage to models or tools resulting from readers' use of "Pit Tips."

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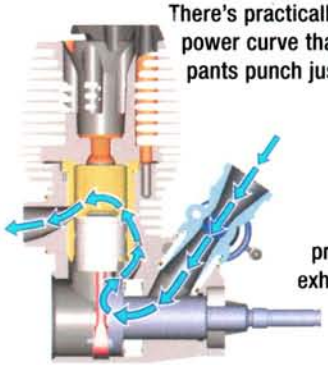
THE POWER OF TRX 2.5 - ELEVATING

ALL NEW DESIGN! The Traxxas TRX 2.5 Racing Engine is all new! It's the result of over 2 years of focused engineering development and thousands of hours of real-world testing. The TRX 2.5 delivers the power and technology of the world's finest high-performance racing engines, and truly elevates Ready-to-Run to Ready-to-Race®!

Bigger isn't always better.

Building a world-class racing engine goes well beyond just making bigger and bigger versions of old, inefficient designs. Smarter engineering and superior manufacturing have produced an advanced, high-tech engine that is 60% more powerful than our original Pro .15 engine, and simply blows away other typical .15-.18 size engines. There's practically no match for the TRX 2.5's broad power curve that pumps out tire-blazing, kick-in-the-pants punch just about anywhere on the RPM scale.



Straight-through Rear Exhaust Flow

The Rear facing round exhaust port provides unrestricted "straight-through" exhaust flow. The low exhaust port height provides a longer duration power stroke for increased efficiency and total power output.

TRX IPS Crankshaft

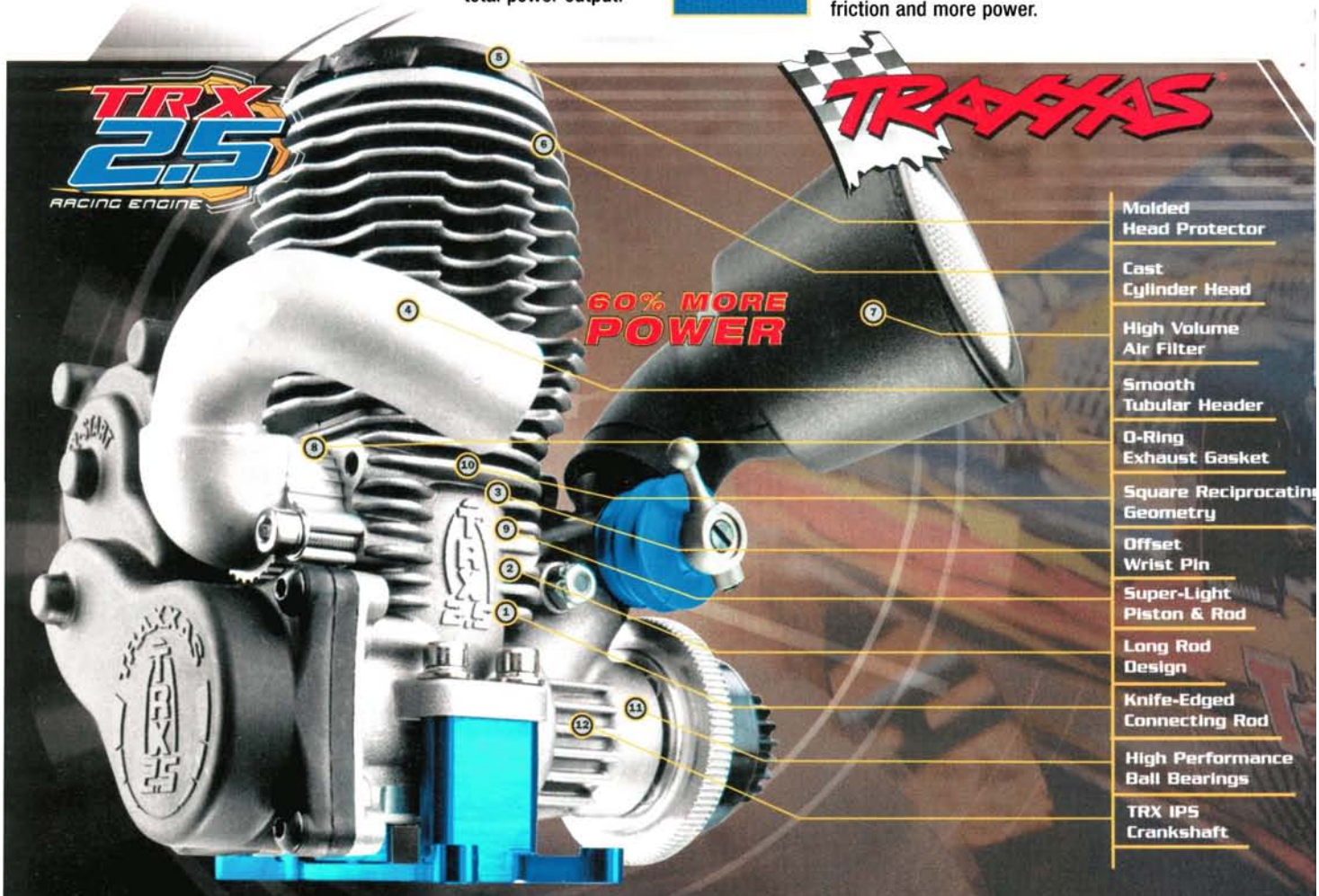
The heart of the TRX 2.5 is its all-new 12mm IPS (Integrated Pilot Shaft) crankshaft. Vibration and inconsistent gear mesh caused by two-piece crank designs can steal up to 10% of the power. The one-piece IPS crank provides extremely precise gear mesh and virtually eliminates vibration. In addition, the crank is precisely positioned by the front bearing for nearly zero crankshaft endplay.

The IPS crankshaft undergoes multiple hardening processes. Surface preparation includes surface hardening, precision grinding, and micro-polishing for extremely long-wearing performance.

The bottom end of the connecting rod rotates on an extra large-diameter crankshaft pin, much larger than what is typically used in this size engine. This provides the reliability needed for these critical components in such a high-powered engine.

Lightweight Piston and Rod

The super-light piston, wrist pin and connecting rod deliver a smoother, faster-revving, more efficient engine. The TRX 2.5's connecting rod is longer than in any other small-block .15 engine. The longer rod decreases the rod angle throughout the entire stroke of the piston, reducing side load on the piston. It adds up to less friction and more power.



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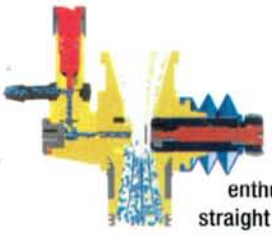
Traxxas Corp.1100 Klein, Plano Tx, 75074 Ph. 972-265-8000. Traxxas U.K., P.O. Box 1128, Winterbourne, Bristol BS17-2SH, England. Ph. 44-117-956-1002 Fax 44-117-956-1121.

READY-TO-RUN TO READY-TO-RACE®



Slide Carburetor Provides Superior Fuel Atomization

The TRX 2.5 is equipped with the all-new TRX Composite Slide Carburetor. The slide carburetor is desired by performance enthusiasts because it provides less restrictive, straight through airflow for more power and better throttle response than typical barrel carburetors. It's an expensive option on some models, and not even available on others! Look at all the advanced design features below:

Precision molding provides a smoother, better-flowing inlet tract than cast or machined carburetors

The carburetor, air-filter, and crankcase are integrated to provide smooth continuous airflow with minimal turbulence. It flows more air faster and more efficiently than conventional carburetors

Industry First! The integral molded spray bar makes possible the use of an extremely intricate shape that increases torque and efficiency across the engine's entire RPM range

The low-speed needle has a positive stop to prevent damage to the spray bar from over-tightening

The dust boot seals out harmful dirt and covers the built-in throttle return spring

Molded LCP (Liquid Crystal Polymer) body is lighter and greatly reduces power-robbing heat transfer to the carburetor body

Easy, Reliable, Push-Button Engine Starting

The new from the ground up, Traxxas EZ-Start™ System brings the power and convenience of push-button electric starting to the TRX 2.5 engine. Simply plug in the hand-held control unit, push the button, and the EZ-Start System automatically heats the glow plug and the lightweight, compact on-board drive spins the engine. There's no need to break a sweat yanking on a starter cord or keep up with a separate glow plug igniter.

Traxxas' exclusive Smart Start™ technology monitors critical starting functions, automatically sensing and diagnosing potential problems for trouble free engine starting every time.

EZ Start Electric Starting System

- **A** Regulated output supplies constant voltage to heat the glow plug, regardless of battery condition or starter motor load.
- **B** Glow plug status indicator signals failed glow plugs.
- **C** Elastomer cush drive output protects critical starter gears.
- **D** Compact, planetary gear reduction.
- **E** Indicator light shows the status of the starter drive circuitry.
- **F** Efficient, thermal-sensing MOSFET circuitry provides greater starting *power and longer battery life.*
- **G** Fully-enclosed battery.†
- **H** Integrated vehicle connector for one-handed operation.

† Battery not included.

1 Knife-Edged Connecting Rod

The knife-edged connecting rod slips through the dense fuel air mixture in the crankcase, reducing turbulence and drag.

2 Long Rod Design

The TRX 2.5's connecting rod is longer than in any other small-block .15 engine. The longer rod decreases the rod angle throughout the entire stroke of the piston, reducing side load on the piston. It adds up to less friction and more power.

3 Offset Wrist Pin

The TRX 2.5 incorporates an offset wrist pin to further reduce piston side loading for more even cylinder wear, and longer engine life.

4 Smooth Tubular Header

The tubular header features smooth, rounded bends to eliminate exhaust flow restriction and turbulence. Its precise shape and length have been matched to the engine and the exhaust pipe for maximum power output.

5 Molded Head Protector

The molded head protector prevents damage to the head and secures the glow plug wire.

6 Cast Cylinder Head

The innovative cast head is engineered for the most heat reduction possible. Cooler running equals more power!

7 High-Volume Air Filter

The ultra low-restriction air filter provides superior air-flow and filtration for more power and long engine life. The two-stage design features a reusable oiled foam element and built-in fine mesh pre-filter.

8 O-Ring Exhaust Gasket

The exhaust header features an extra-tough, finned mounting base that dissipates heat and is sealed with a reliable O-ring gasket.

9 Super-Light Piston and Rod

The super-light piston, wrist pin and connecting rod deliver a smoother, faster-*revving, more efficient engine.*

10 Square Reciprocating Geometry

Square reciprocating geometry gives the TRX 2.5 a 1:1 bore-stroke ratio. What this means for you is no-compromise, smooth, linear power throughout the engine's entire RPM range.

11 High Performance Ball Bearings

High performance, large diameter ball bearings improve power by reducing friction. The rear bearing uses a special composite cage for reliable operation at engine speeds that approach 50,000 RPM!

12 TRX IPS Crankshaft

The heart of the TRX 2.5 is its all-new 12mm IPS (Integrated Pilot Shaft) crankshaft. Vibration and inconsistent gear mesh caused by two-piece crank designs can steal up to 10% of the power. The one-piece IPS crank provides extremely precise gear mesh and virtually eliminates vibration.

Questions? Call the Traxxas' technical support department at 1-888-TRAXXAS (872-9927). Customers outside U.S.A call (972) 265-8000. Or E-mail us at support@traxxas.com.

troubleshooting

YOU'VE GOT PROBLEMS? WE'VE GOT FIXES.

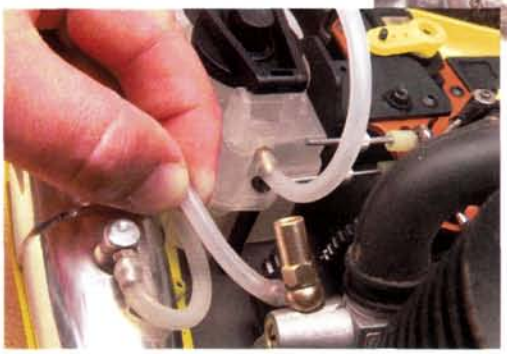
BY JASON SAMS

SPONSORED BY RRP ROBINSON RACING PRODUCTS

ENGINE WOES AFTER BREAK-IN

I have a problem with my Mugen MT .12 non-pull-start engine with a slide carburetor. I have used six or seven tanks of 20 percent Blue Thunder fuel during the break-in process. I have been slowly leaning the engine out. After I've used half a tank during moderately fast running, the engine seems not to be getting fuel, and it dies. Then it won't restart, and I have to let it cool down. What should I do? [email]

Colin Bunting



Above: when you adjust the needle valves on the carb, do so a little at a time.

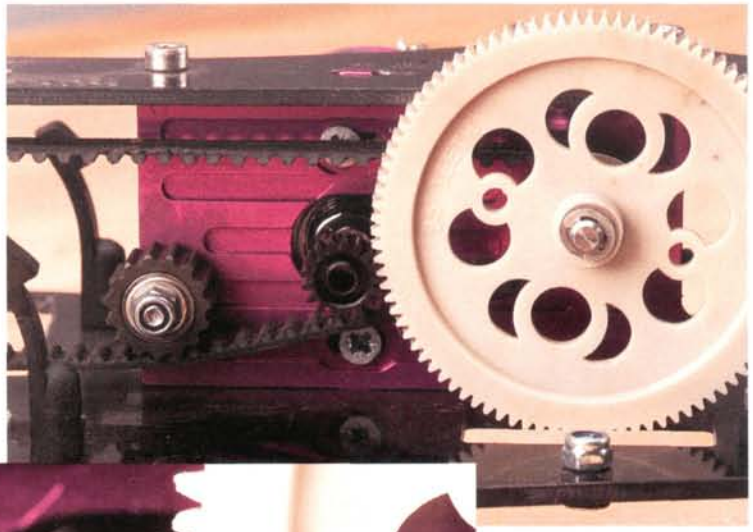
Left: squeezing the fuel tubing is a quick and easy way to check whether your engine is properly tuned.

If an engine is run too lean, it will run fine for a few minutes but will then stall because it becomes too hot. The same lean engine will also be difficult to start because it has overheated. A good test to see whether the low-speed needle has been set correctly is to pinch the fuel tubing that feeds the carburetor. When this is done, a properly functioning engine should rev up a second or two after the fuel has been cut off. If the engine instantly stalls, its low-speed needle is set too lean; if the engine runs for several seconds before it revs up, the low-speed needle is set too rich. (Remember: all carburetors can be richened by rotating the needle valve counterclockwise and leaned by turning the needle valve clockwise.) If the low-speed needle has been set properly, the high-speed needle is the culprit. When the car is run at top speed, its exhaust should emit a healthy cloud of bluish smoke. If it doesn't, or if the engine stutters and tries to cut out when the throttle trigger is at full pull, the high-speed needle is too lean. Richen it by turning it counterclockwise a little at a time. Try to imagine the needle's slot as a clock's hour hand. Adjust the mixture about 1/12 turn, or "one hour" on a clock face. Many enthusiasts tend to make drastic setting changes when they're trying to fine-tune their engines; but it's best to make only small changes. Remember to tune your engine after it has run for a few minutes and had a chance to warm up. These tips will help get your car back in tune, so you can keep having fun.

FLAMING HOT ELECTRONICS

After I've run my 4WD buggy for about 10 minutes, all of the electronics (motor, ESC and battery) are flaming hot. I have a 14-turn modified motor in it, and my speedo is rated up to 12 turns. The drive train is bone stock. What should I do? [email] *J.W.*

Running any electric vehicle for 10 minutes will cause the electronics to heat up. If you plan to drive the car this long (or until the battery is completely dead), you should gear down. Run a smaller pinion gear, and make sure that the gear mesh has some slight play. If the mesh is too tight, the binding gears will cause the motor, battery and ESC to work harder than they need to, and they will overheat. It isn't unusual for a 4WD off-road buggy or 4WD touring car to get pretty warm; their drive trains put a greater load on the motor and electronics than those of 2WD cars. If the motor and speedo become too hot to touch, the problem might be something other than the gearing. Remove the motor, and check to see whether the drive train is smooth and spins freely. To work properly, bearings and bushings must be clean. If your speed controller has a motor limit, definitely stay within the guidelines. As you push the envelope and get closer to those limits, expect the speedo to get warm. As a rule, you should run motors that are two turns higher than recommended for the speed controller.



Above: it's difficult to tell just by looking whether the gear mesh has been set correctly.

Left: in this close-up, you can see that there's sufficient play where the pinion and spur gears engage. This setting prolongs gear life and helps reduce unwanted friction in the drive train.

REVERSING WOES

I'm having a problem with the 2WD truck kit I built. When I connect the battery to it, it sometimes makes the wheels spin, and the only way I can stop this is to turn on the controller. I've hooked up the motor connector wires correctly—black to black and red to red—but when I pull the trigger on the transmitter to drive forward, the truck goes backward (and vice versa). If I switch the two wires, the motor runs fine, but the steering is reversed. How can I fix this? [email]
Steve

You should always turn on the radio before you turn on your truck or car; this ensures that it is receiving a signal from the radio and prevents any glitches that can cause an out-of-control vehicle. When you shut off the car, reverse the order; turn the car off first and then turn off the radio.

When the radio and the car are both on, pull slightly on the trigger so you can see in which direction the wheels are spinning. If the leads to the motor have been connected correctly, the wheels should spin forward. If the wheels spin backwards, you simply need to change the throttle-reversing switch on your radio. This switch may be small, and you may need to use a small-slot screwdriver to change it. The throttle channel is usually referred to as "channel two." Move the switch from normal to reverse; this should prevent the wheels from spinning in the wrong direction. When the throttle problem has been fixed, move on to the steering. Before you make any changes, be sure to check whether the servo wires have been correctly installed in the receiver (there should be some indication where the white, red and black wires should line up). If the truck's steering function is still wrong, then the reversing switch for steering must be changed on the radio, as well. The steering function is channel one. Move the switch over, and the truck should steer correctly.

Above: **almost all transmitters come with servo-reversing; each switch is labeled to show which servo it adjusts.**

Left: **make sure that the wires are plugged into the correct slots on the receiver; each slot is clearly marked. "BATT" is obviously for the battery pack, "CH1" is the steering servo, and "CH2" is for an ESC or a throttle servo.**

A NOISY PROBLEM

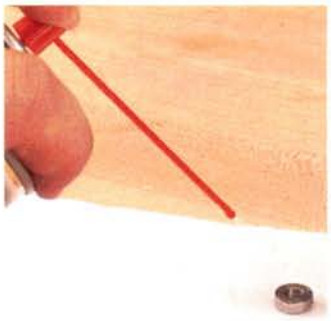
When I run my truck, it makes a high-pitched whining noise that comes from the rear—either from the differential or the motor. Is that natural, or is it something that I need to fix? Also, how do I check whether the differentials are worn, and how do I fix them?
[email]
Justin Kirch

If the diff gear spins easily when the outdrives are held stationary and the diff has already been tightened, it's time for a rebuild. To keep the outdrives motionless, use two screwdrivers or pick up one of these handy tools from XTM Racing.

If you didn't notice the high-pitched noise when the truck was new, it probably isn't normal. A few things can make the drive train sound like this; first, check the condition of your spur gear. Its teeth should be slightly rounded with no sharp edges. When gear teeth wear, they become sharply pointed. A gear in this condition is noisy and inefficient and should be replaced. The mesh between the spur and pinion gear should also be minimal. The gap between the gears should be about the width of a piece of paper. If the gap is too wide, the gears barely touch, and this makes them extra noisy.

After you have checked these gears, remove the bearings from the rear hub carriers and clean them. If any of them are damaged or don't feel smooth, replace them.

Next, remove the truck's diff, and spin its ends in opposite directions; it should spin freely without feeling gritty or rough. Otherwise, it will need to be rebuilt. Replace the main diff gear, the ball bearings, shims, diff rings and any other worn-out hardware. If the diff screw and rings are in good condition, they can be reused. If the rings have been grooved by the ball bearings, save some money by just flipping them over and using the other side. When you're working on the diff, check the gears inside the transmission. If any of them are worn as described earlier, replace them, too.



Trinity Buggy Blast works great to flush grit and grime from bearings. Just be sure to lubricate the bearing when you've finished.

TOOLBOX

SpeedMind Universal Tweak Master

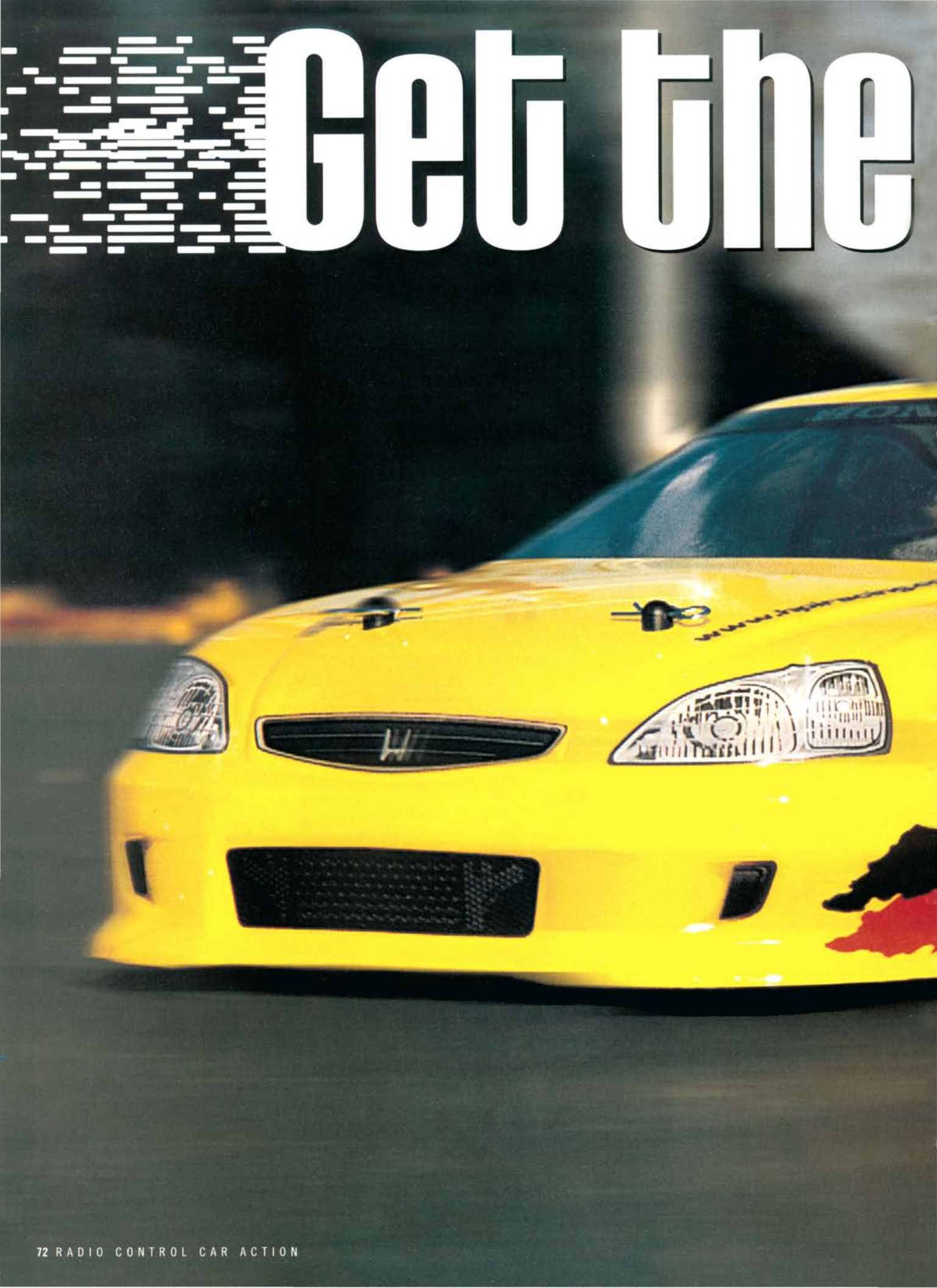
SpeedMind makes this sharp-looking, functional tweak board for setting up 1/10- and 1/12-scale cars. The lightweight, anodized-aluminum platforms are available in three colors: blue, black and purple. The center shaft is of stainless steel. High-quality factory-installed ball bearings for the front platform allow it to accurately find its balance. Three adjustable leveling feet are also included, so the tool can be used on most surfaces. An easy-to-read bubble level built into the front platform works not only for balancing a chassis but also for properly setting up the tool. A rigid carrying case is also included.

Item nos. PT-100B (blue), PT-100BK (black), PT-100P (purple); $54.99. SpeedMind; distributed by Magma Intl. Ltd. (905) 886-1808; speedmind.ca.

NEED **HELP?**

Send your "Troubleshooting" questions and comments to Jason Sams, jasons@airage.com.

Get the



Drift!

RC drifting: the sideways setup

by Robert Gunning Photos by Pete Hall

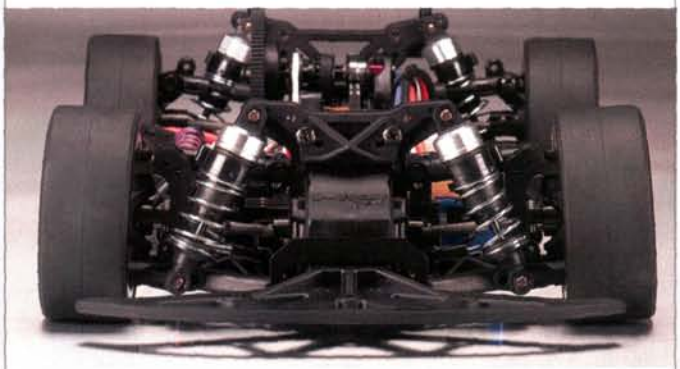
It wasn't long after Tamiya released its first TA-01 kit (the all-black Nissan Skyline—remember?) that mainstream RC fans got a taste of the impossibly long, full-opposite-lock slides that are possible with 4WD touring cars. This sort of sideways action is exactly what "drifting" is all about. Drifting began as a niche within the import-tuner-car scene in Japan (of course, the "imports" are domestic cars in Japan), and the scene has crossed over to California's hardcore tuners—and RC fans. Like the "real thing," RC drifting is hardcore, tire-shredding, fully intentional mayhem. And damn, is it fun! I'll show you how to get your car dialed to drift and give you some driving tips for superior sideways showing off.

»» Drifting Setup

If you have any RC racing experience, you know that the ideal setup provides you with a well-balanced chassis that sticks to the track without sliding. Just the opposite holds true when it comes to a drift machine. The goal here is to de-tune your car to find the perfect middle ground between grip and slide. The following basic setup principles can be applied to almost any 4WD sedan, but as with all setups, these are just suggestions; experiment with shock-oil weight, spring rates and tires to find what works best for your driving style and driving conditions.

CAMBER

I recommend that you start with -4 degrees of front camber. It looks like a lot, but it works! In the rear, I suggest zero camber; the wheels should be perfectly perpendicular to the ground. Remember: you're setting the car up for sideways drift—not straight-line running or best cornering grip. These settings allow maximum front-tire contact in a slide and minimal rear-tire contact. That's what you need for controlled drifting.



One or 2 degrees of negative camber is typical for a touring car, but drifting requires more; try -4 degrees for starters.

STEERING SERVO

A "standard" steering servo is all you need to drift; much of the steering is done with the throttle. If you really get into drifting, upgrade to a faster servo; you don't need a lot of torque, but a more responsive servo will make the car more "flickable."

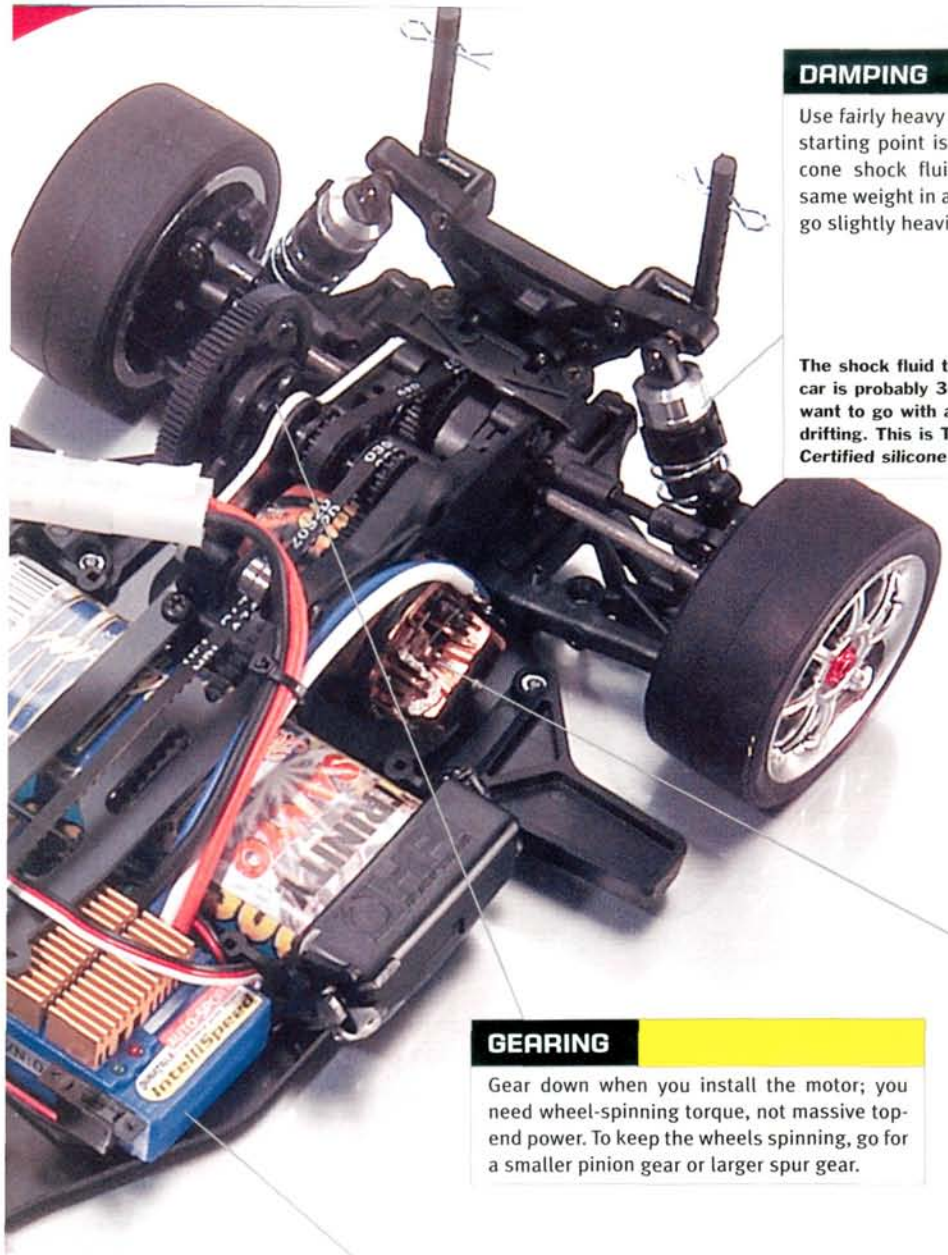
SPRINGS

Go heavy on the spring rate to match the firmer damping. A "heavy" or "stiff" spring in the rear and a "medium" spring in the front is a good baseline; no matter which rates you choose, use the stiffer springs on the rear shocks.

TIRES

The harder your tires, the better! If you have tires of various compounds, put the hardest tires on the rear. I really like the vinyl-like slicks included with Tamiya's sport kits. They are cheap, hard and work really well for drifting. You can run whichever inserts are included with the tires, but if you want to get fancy, having a firm molded insert in the rear and a medium insert in the front makes a good setup.

Hard slick tires are the way to go; these are Tamiya kit tires mounted on RPM 8-Ball wheels.



DAMPING

Use fairly heavy shock oil. A good starting point is 60 to 80WT silicone shock fluid. Try using the same weight in all four corners, or go slightly heavier in the rear.

The shock fluid that came with your car is probably 30 or 40WT; you'll want to go with a thicker fluid for drifting. This is Team Losi's *Certified* silicone fluid.

MOTOR

If you were psyched to hear that cheap tires are the hot setup for drifting, you'll also be glad to know that you won't need an expensive motor! Drifting requires torque—not sheer rpm. When drifting, you must maintain wheelspin at all times. If your car doesn't have enough torque to keep the rear wheels sliding, it will hook up and lose its drift (and you'll look like a wuss in front of all your friends), or your car will spin out because it doesn't have the power to sustain a drift (and, again, you'll look pretty lame). Competition stock motors are most widely used for the RC drifting scene. Other good choices are mild modifieds in the 17- to 19-turn range.

GEARING

Gear down when you install the motor; you need wheel-spinning torque, not massive top-end power. To keep the wheels spinning, go for a smaller pinion gear or larger spur gear.

ELECTRONIC SPEED CONTROL

Since you'll use a stock or mild-mod motor in your drifter machine, you can use just about any ESC (this is a perfect opportunity to resurrect your old, not-good-enough-for-racing ESC). Reverse is fun to have, as it opens up other stunt-driving possibilities; but drifting is all about forward motion, so reverse is completely optional.

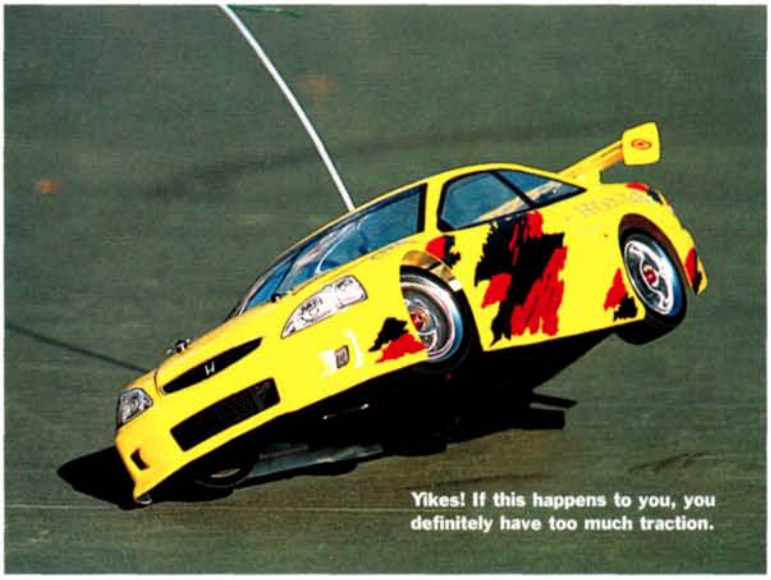
A *competition stock motor* (such as the Trinity P2k2 installed in our HPI RS4 Sport 2) or a machine-wound, mild-modified (like this Trinity Speed Gems Pro Amber 17-turn) will give you the wheel-spinning torque you need for drifting.

»»Can my car drift?

The most basic element of a proper RC drift car is a light machine. Bulk is bad; you need something strong yet light. A stiffer chassis is also beneficial; you don't want to flex while drifting. Any 4WD touring car can be set up for drifting, but some cars stand out as ideal drifters. In my opinion, the HPI RS4 series is the best platform thanks to its low weight, durable design, upgrade potential and excellent parts support. The RS4 Pro and Sport cars and the RS4 Rally all make excellent drifters. The car seen here is an HPI RS4 Sport 2.

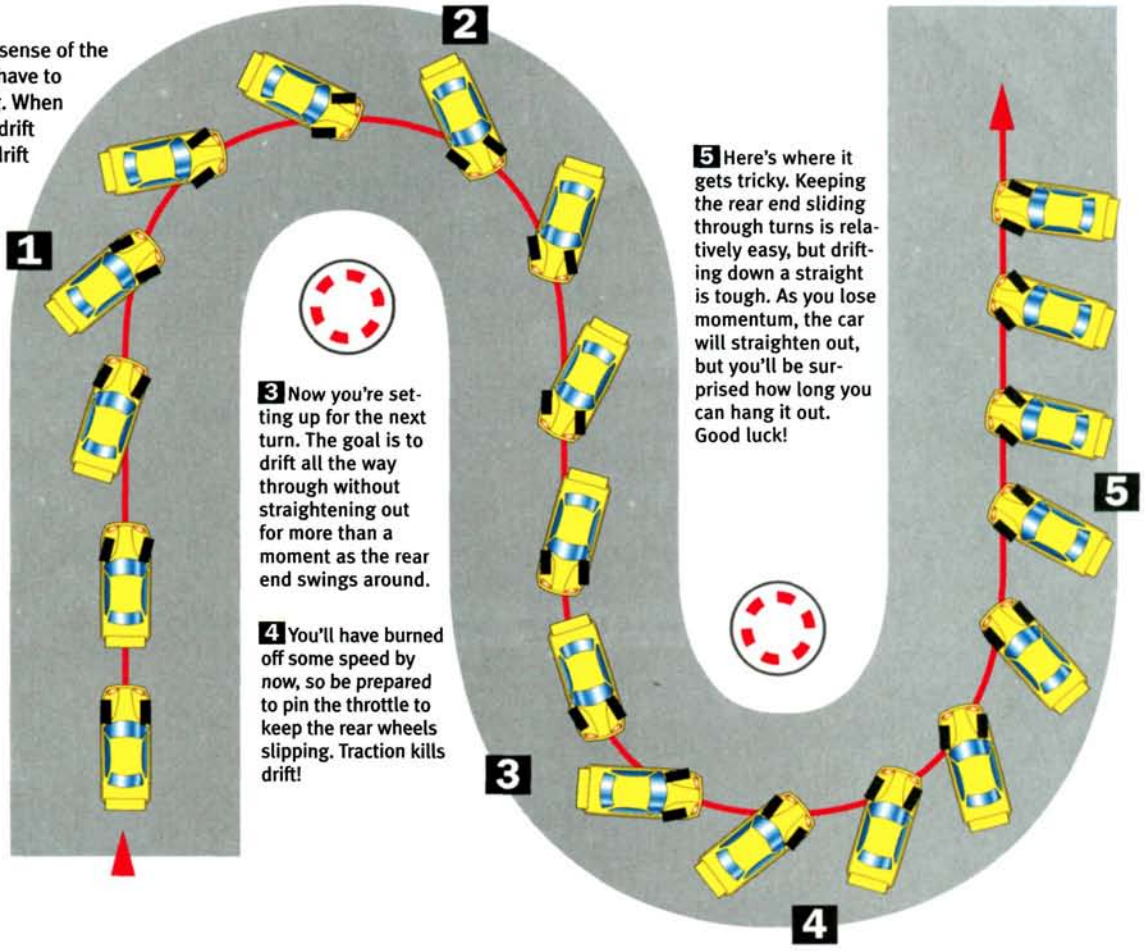
»» Getting the drift

The easiest way to learn to drift is to drive in a straight line (don't worry, there's more). Now slowly weave the car back and forth to get a feel for its "grip points," where the rear tires begin to lose their grip. Note the car's attitude at those grip points. Now increase your speed, and do it again. Repeat until the tail end starts to come around and forces you to countersteer. This is exactly what you want to happen. Once you can successfully "catch" the car in both directions and prevent it from looping out, you're ready to start hanging with the big boys. Now, when you get your car to lose rear traction, try to hold it there! You must maintain enough speed to first get the car sideways and then maintain that speed to keep the tires spinning while you countersteer enough to prevent a loop-out without overcorrecting and losing the drift. Get it? Cool. With practice, you'll be able to hold the drift as long as you like and even change directions, without ever driving in the conventional straight-ahead mode.



Yikes! If this happens to you, you definitely have too much traction.

This illustration gives a good sense of the steering and throttling you'll have to input to keep your car drifting. When snapping the car from its full drift angle in one direction to full drift in the opposite direction, be prepared for the rear end to come around with more force then when initiating a drift from straight-ahead running. Give yourself plenty of space as you master your technique so you don't slap a curb or something equally immobile!



1 Steer hard into the turn to initiate a slide, then countersteer before the car loops out.

2 Continue countersteering to maintain the slide. It's a balancing act!

3 Now you're setting up for the next turn. The goal is to drift all the way through without straightening out for more than a moment as the rear end swings around.

4 You'll have burned off some speed by now, so be prepared to pin the throttle to keep the rear wheels slipping. Traction kills drift!

5 Here's where it gets tricky. Keeping the rear end sliding through turns is relatively easy, but drifting down a straight is tough. As you lose momentum, the car will straighten out, but you'll be surprised how long you can hang it out. Good luck!

SOURCE GUIDE

DURATRAX distributed by Great Planes Model Distributors (800) 682-8948; duratrax.com.

HPI RACING (949) 753-1099; hpiracing.com.

RPM R/C PRODUCTS (909) 393-0366; rpmrcproducts.com.

TAMIYA AMERICA INC. (800) 826-4922; tamiyausa.com.

TEAM LOSI distributed by Horizon Hobby Inc. (800) 338-4639; teamlosi.com; horizonhobby.com.

TRINITY PRODUCTS (732) 635-1600; teamtrinity.com.

Hey, you got it easy with RC drifting. If you were doing this in a full-size car, you would not only have to do the same things with the full-size steering wheel as you do with the transmitter's wheel, but you would also have to dance on the brake, accelerator and clutch pedals to maintain throttle and shift at the same time—which means you'd be steering with only one hand! ■

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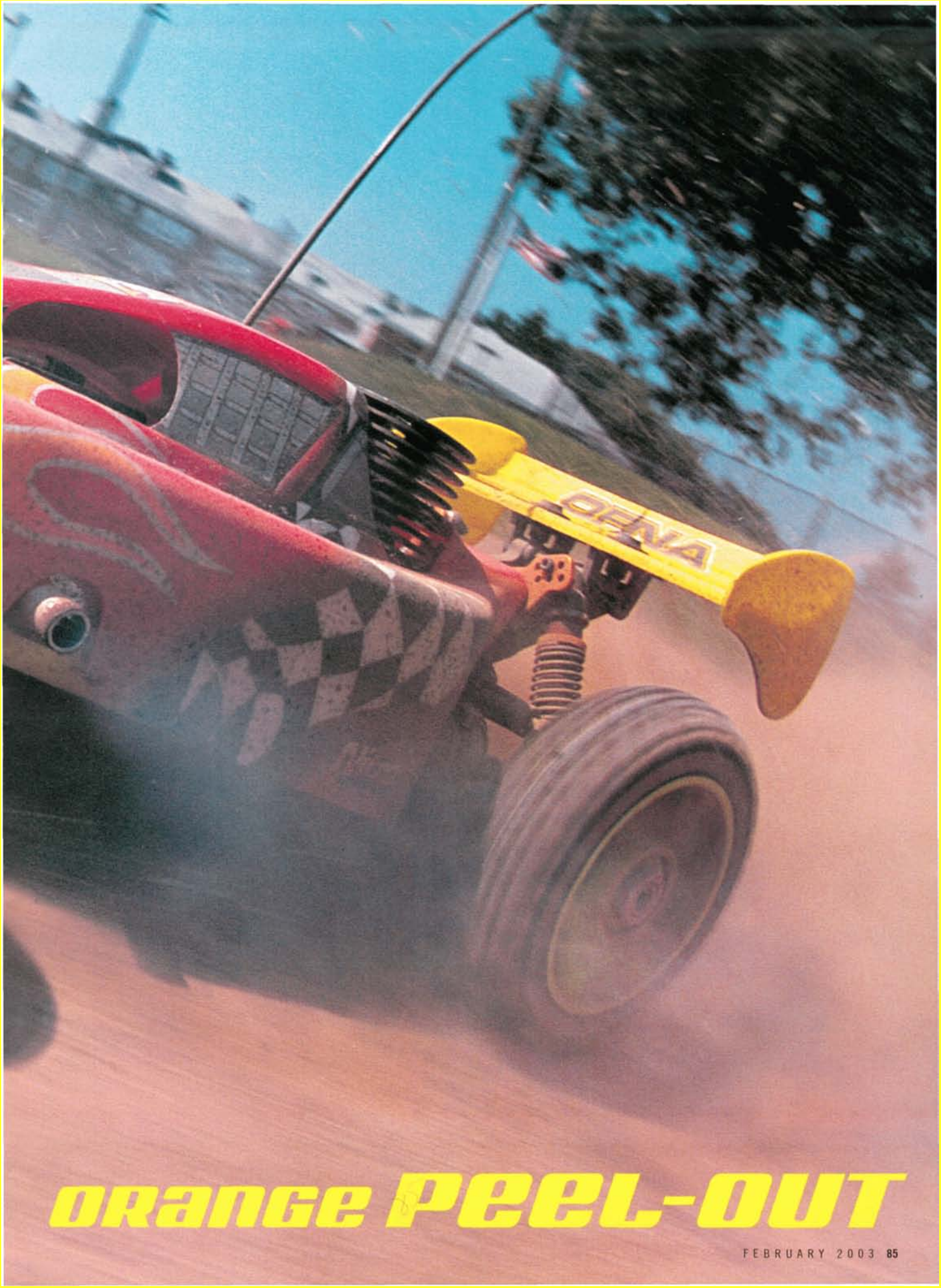
1/8-SCALE NITRO by Paul Onorato

OFNA 9.5 MBX

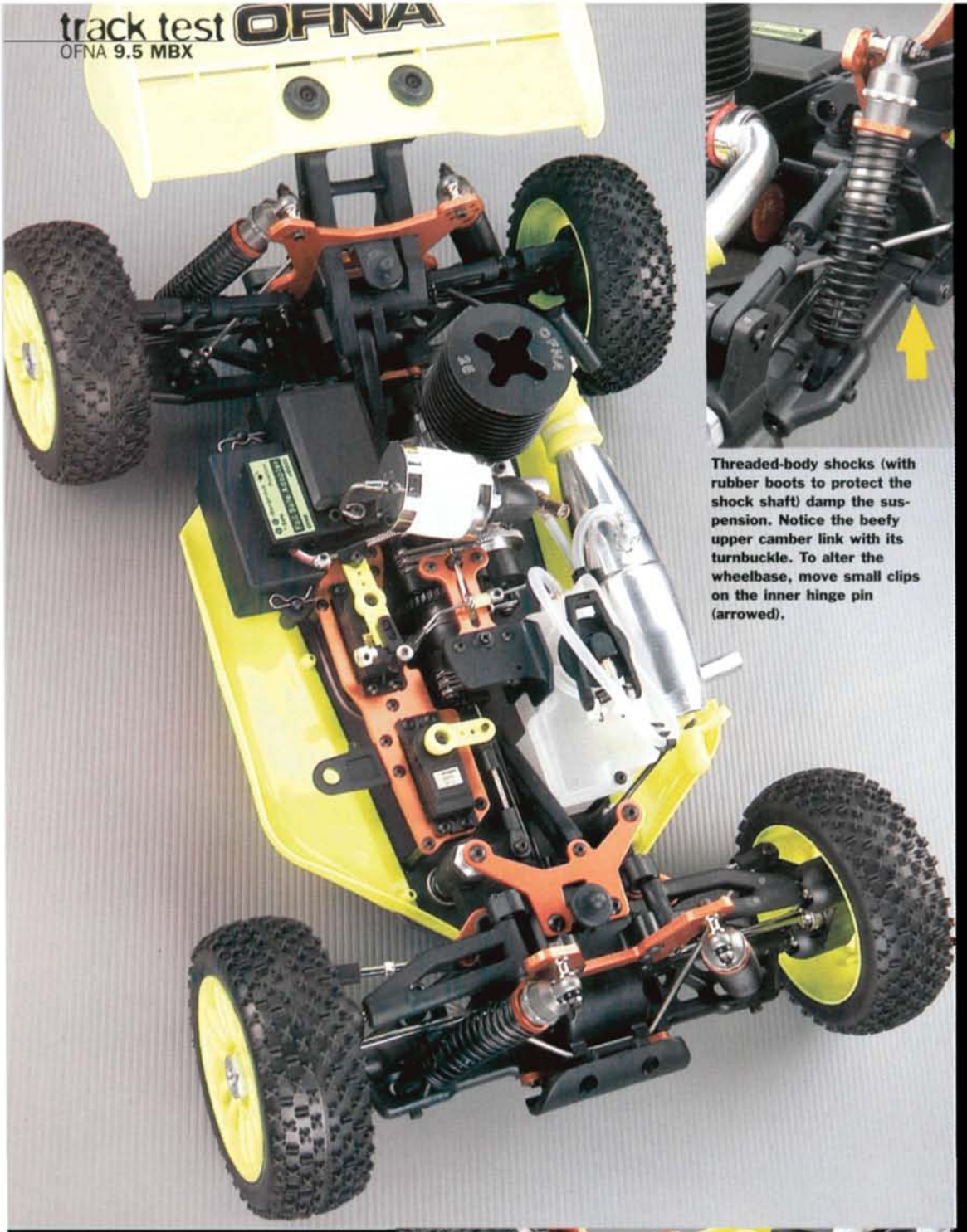
IF YOU EVER HAVE THE CHANCE to drive 1/8-scale buggies or see them race, jump at the opportunity. Their power, speed and excellent off-road handling will surely make you want one of these 4WD nitro rockets. When you're ready to join the fun, OFNA's new 9.5 MBX ready-to-run buggy can get you into the action in a hurry.

The MBX is fully assembled and has a painted and mounted body, a glow starter and fuel spout, a steel spur gear, quad disc brakes and more—plus the biggest engine you can squeeze into an 1/8-scale buggy: the Force .25. With that kind of pull-start power, the 9.5 MBX might be the hairiest RTR big buggy yet!

PHOTOS BY PETE HALL

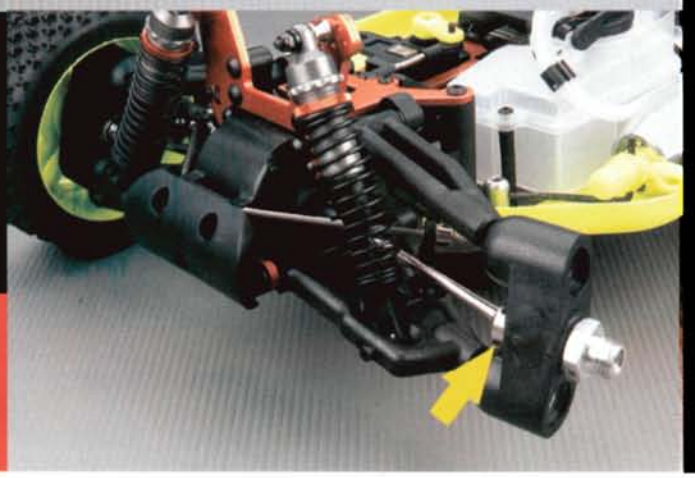


Orange Peel-Out



Threaded-body shocks (with rubber boots to protect the shock shaft) damp the suspension. Notice the beefy upper camber link with its turnbuckle. To alter the wheelbase, move small clips on the inner hinge pin (arrowed).

The suspension components are built tough to withstand off-road abuse. OFNA cleverly designed the stub-axle's drive cup with an extra set of pin holes (arrowed) to be used when the original holes wear; you won't have to replace the entire axle assembly.



THE CHASSIS IS BUILT ON A TOUGH, 3.2MM, GRAY-ANODIZED AND RADIUSED LOWER PLATE.

DATA CENTER

VEHICLE TYPE 1/8-scale off-road buggy
BEST BUYER Intermediate to pro drivers
KIT RATINGS (poor, satisfactory, good, very good, excellent)
Instructions Good
Parts fit and finish Good
Durability Good
Overall performance Good

SPECIFICATIONS

MANUFACTURER OFNA
MODEL 9.5 MBX
SCALE 1/8
PRICE $515
(Varies with dealer)

DIMENSIONS
Wheelbase 12.75 in. (324mm)
Width (F/R) 11.75/12 in. (298/305mm)

WEIGHT
Total, as tested 107.48 oz. (3,047g)

CHASSIS
Type Lower plate w/front kick-up
Material 3.18mm anodized-aluminum

DRIVE TRAIN
Type Shaft
Primary 13T/47T
Primary ratio 3.29:1
Transmission/drive-train ratio 3.31:1
Final drive ratio 9.74:1
Drive shafts (F/R) Universal/dogbone
Differential(s) Grease-filled gear diffs
Bearing type Metal-shielded ball bearings

SUSPENSION (F/R)
Type Pivot-ball
Shocks Threaded-body, oil-filled, coil-over

WHEELS
Type Yellow plastic 6-spoke (split)

TIRES
Type Mounted and glued "X="-pattern tread

ENGINE & ACCESSORIES
Engine .25 pull-start
Carburetor 2-needle slide
Header Aluminum wraparound
Pipe Tuned aluminum
Starter Pull-starter
Tank 125cc

KIT FEATURES

CHASSIS. The chassis is built on a tough, 3.2mm, gray-anodized and radiused lower plate. Large yellow dirt shields reduce the amount of debris that can be thrown up into the chassis. An orange-anodized upper deck holds the steering and throttle servos, and the receiver and battery pack are mounted toward the rear in sealed plastic cases. A transponder mount for racing is also included, and plastic braces buttress the front and rear gearboxes.

DRIVE TRAIN. The MBX is bound to be fast with its included .25 engine, so OFNA spec'd a 4-rotor disc-brake system to make sure the big buggy will stop as efficiently as it runs. The metal brake rotors are grabbed by fiber pads, and the front brake is protected by a splashguard to prevent fuel spills from hampering braking performance. The 9.5's triple diffs are grease-filled at the factory, but gasket- and O-ring seals are installed so that you can fill the diffs with silicone later. Front universal-joint axles and rear dogbones spin the wheels, and metal-shielded ball bearings reduce friction throughout the drive train.

Above: The fail-safe unit is a nice extra for an 1/8-scale buggy. If it senses a radio problem, it will return the throttle servo to neutral, so you'll avoid having a high-speed crash into the boards. Left: The large gear differentials are easy to get to; very little disassembly is required. The front and rear diffs are lubricated with heavy grease. The hefty swaybar helps to keep the chassis level when the buggy is cornering.

ENGINE AND ACCESSORIES. Most RTR 1/8-scale buggies include a .21 engine, but the 9.5 MBX's 4-port Force engine is a .25. Bigger is always better! Along with the increased displacement, the usual Force features are in place: ABC construction (aluminum piston, brass sleeve with chrome plating); aluminum-body, 2-needle carb; machined connecting rod; and a large, 11-fin cooling head. The exhaust system is good stuff, too; a polished header and tuned pipe get the most out of the extra displacement, and a tethered rubber cap seals the pipe's stinger to prevent exhaust residue from dripping out of the pipe between runs.

The MBX's 125cc fuel tank has a splashguard, a cap-mounted pressure tap and a built-in fuel filter. Screw-on fuel-tubing clips keep the fuel lines routed neatly.

SUSPENSION AND STEERING. Large-diameter shocks with gray-anodized threaded bodies and knurled preload collars provide plenty of damping for the 9.5. The shock shafts have rubber boots to fend off damaging dirt, and the shock angle can be adjusted to any of six upper positions and two lower positions on each corner.

OFNA reduced the overall parts count and increased chassis-tuning options by using a pivot-ball setup for the front-suspension components. The pivot balls allow fine camber and width adjustments. The rear end of the MBX has been given a slightly different treatment: a lower H-arm with two pivot balls on the end allows toe and track changes, and an upper turnbuckle link allows camber adjustments. To alter the chassis' roll characteristics, you have a choice of several holes for the front and rear upper links.

An adjustable servo-saver is built into the right side of a twin-bellcrank steering setup. A 3mm-thick piece of aluminum acts as the drag link, and turnbuckle-equipped tie rods pull the steering knuckles to change the MBX's direction.

BODY, WHEELS AND TIRES. The MBX's "flame" body arrives trimmed and mounted, with the engine, fuel tank and mounting posts installed. Attached to adjustable mounts, the large nylon wing is molded in the same bright yellow as the chassis' dirt guards. The split-spoke wheels continue the yellow theme and wear factory-glued "X="-tread tires with foam inserts.

ELECTRONICS & ACCESSORIES

INCLUDED

AIRTRONICS BLAZER SPORT. The Blazer Sport is Airtronics' most inexpensive AM transmitter, and it's as basic as radios come; servo-reversing, throttle and steering trims, a charging jack and an LED power indicator are its only features. But it's very reliable, and there's always the included OFNA fail-safe backup unit.

YOU'LL NEED
- Fuel
- 12 AA batteries

AIRTRONICS 94102 THROTTLE/BRAKE AND STEERING SERVOS. The servos are Airtronics' basic, standard units and provide a claimed 53 oz.-in. of torque. The throttle/brake servo is powerful enough, but it falls short of the torque needed to steer the 9.5 MBX effectively.

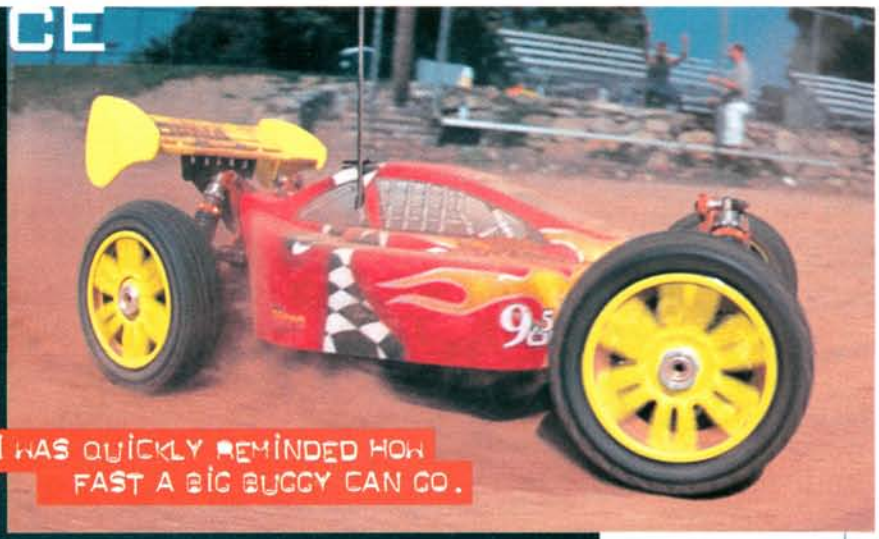
OFNA FAIL-SAFE UNIT. Here's a welcome feature. If the fail-safe unit senses interference, loss of signal, or low battery voltage, it will return the throttle servo to its brake position (or any other position you set, but brake is best) to prevent a runaway. While we were driving, we switched off the transmitter to test the fail-safe, and it stopped the car immediately.

OFNA SUPPORT EQUIPMENT. OFNA includes a bunch of items to complete the MBX package: a two-compartment carrying case that's large enough for two cars; a fuel bottle for easy refueling; a plastic- body, dry-cell glow igniter; air-filter oil and diff oil. All you need to finish the kit are fuel and batteries.

PERFORMANCE

My first action was to properly break in the Force .25 engine. It is hard to resist the urge to blow off the break-in process, but the long-term payoffs of maximum durability and reliability far exceed the fleeting rush of immediate gratification. (Check out "The Truth about Engine Break-In" in the January 2002 issue of *Radio Control Nitro* for excellent information.)

Having broken in the engine, it was time for me to try some laps at our local track. When I pegged the throttle, I was quickly reminded how fast a big buggy can go. Before I knew it, I was pushing the trigger forward to slow the MBX for the first corner at the end of the straight. The quad brake system brought it down from warp speed quickly, particularly for a standard-servo setup.



I WAS QUICKLY REMINDED HOW FAST A BIG BUGGY CAN GO.

Out of the box, the MBX is set up with a front-brake bias; this gives it an easier-to-control push characteristic. I left the braking alone, since it suits my driving style. The brakes were smooth and consistent, and even after extended running, brake fade was barely noticeable.

I tested the 9.5 with its included Airtronics 94102 "standard" steering servo, although I knew it required more than the 53 oz.-in. of torque that the inexpensive servo could provide. In wide sweeping corners, the servo kept the wheels pointing in the right direction, but if I needed to make a sharper turn, the wheels were easily deflected, and I had to slow way down. A servo with 100 oz.-in. of torque is much better suited to buggy duty, and I finished testing with an Airtronics 94757 digital servo that gave the MBX 115 oz.-in. of steering power. This upgrade transformed the handling; it gave it a locked-in feel in the sweepers and much greater response in tight sections. As set up by the factory, the 9.5's suspension pushes slightly in on-power turns and shows a very slight tendency to oversteer when the throttle is chopped.

On the track's rough sections, the MBX maintained its composure because the factory damping settings split the difference between small-bump compliance and big-hit absorption. The buggy sailed over larger jumps—nice and level without requiring any midair throttle corrections. Only the highest BMX-style leaps caused the chassis to bottom out; the suspension easily soaked up RC-size jump landings.

So far, the OFNA 9.5 MBX has shown that it's another solid, 1/8-scale buggy; what really sets it apart from the rest is its hard-hitting .25 engine. The bottom end doesn't feel any more powerful than it would with a port-type .21 engine, but once the .25 spools past the first few thousand rpm, it unloads with a massive tug of torque that kicks the buggy along the track like a JATO booster and helps it reach a top speed of 44.5mph. Though the engine is fierce, it's as easy to start and tune as a milder mill (except during hot restarts; these required about 3/4 throttle and a few extra tugs before the .25 fired up).

LIKES

- Powerful Force .25 engine.
- Included fail-safe unit.
- Pivot-ball suspension is easy to adjust.

THE VERDICT

As with so many other 1/8-scale RTRs, we'd like the 9.5 MBX to have a stronger steering servo as stock equipment (or even a complete upgrade to an FM radio system), but we understand the logic of going with the least expensive radio gear. For many RTR buyers, it's all about the car, and as long as the radio and servos can control the car at all, they're good enough, so why increase the cost of the kit with a pricey servo and FM system? And real racers who have an eye on the MBX will already have a competition-quality system for the car, so they, too, would probably prefer to pay less for the kit than to pay a premium for an included radio system that they don't need. Even if you don't use the kit's radio gear, the 9.5 MBX's many features make it a bargain and earn it high marks for adjustability and gee-whiz appeal, and its biggest-in-class .25 engine gives it all the power you'll need for high-performance play and racing (unless your local track officials are sticklers for displacement rules).

It doesn't hurt one bit that the 9.5 MBX also looks great; the "flame" body, orange anodizing and neon-yellow accents make it a standout even before you fire up its Force .25 engine.

DISLIKES

- Force .25 engine is not legal for racing (so don't tell anyone you're running it).
- A more powerful steering servo is required for the MBX to reach its handling potential.

TEST GEAR

Sidewinder
Backyard Basher 20-percent nitro fuel

I used this fuel from the very first tank of break-in to the test runs at our local track. The fuel is 20 percent nitro and offers extra lubrication to keep the engine running strongly, smoothly and consistently even during long test runs.

SOURCE GUIDE

AIRTRONICS (714) 978-1895; airtronics.net.
OFNA RACING (949) 586-2910; ofna.com.
SIDEWINDER FUELS; distributed by Morgan Fuel (800) 633-7556; morganfuel.com.

THE COMPETITION

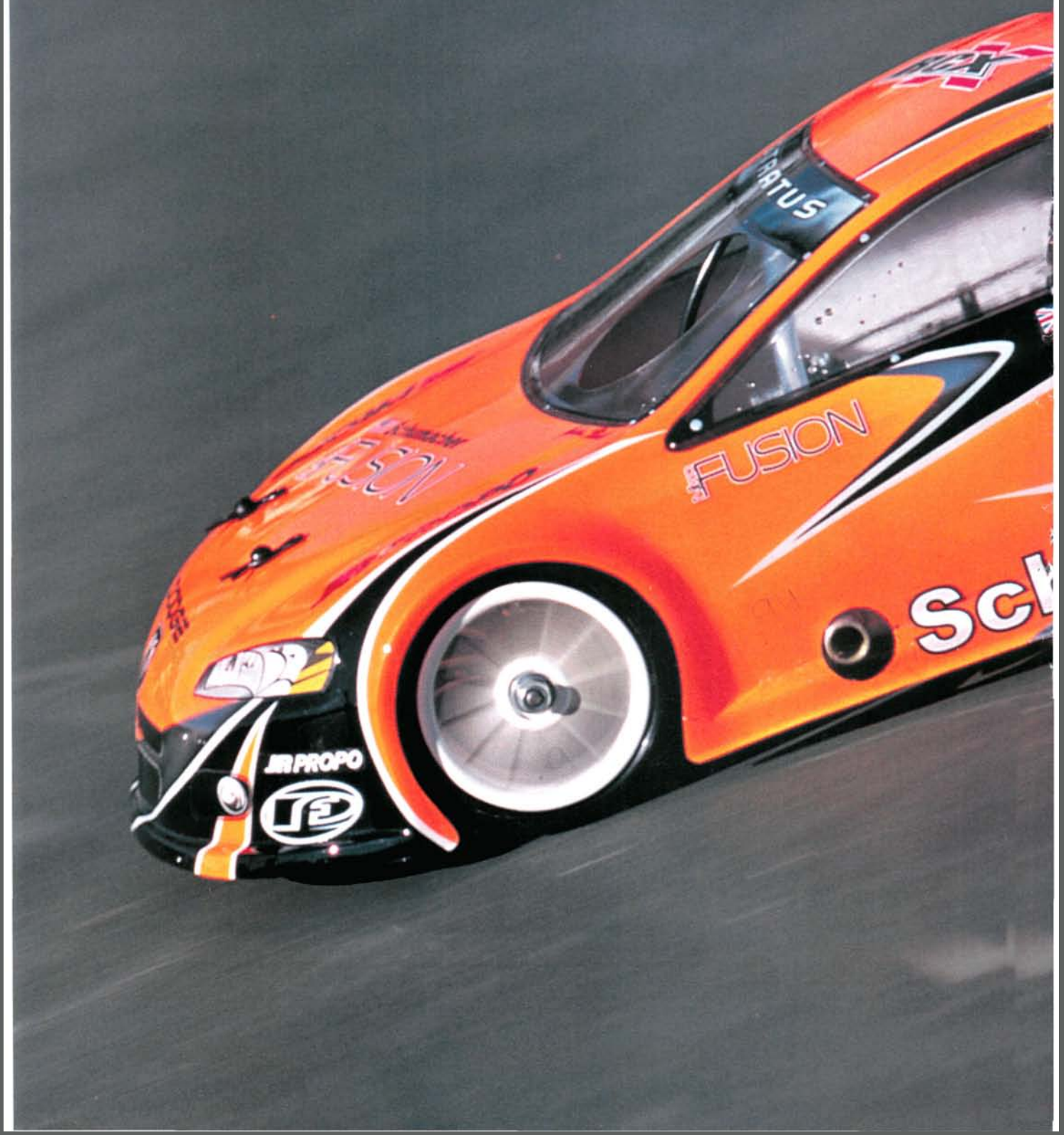
MODEL	CHASSIS	BALL BEARINGS	DRIVE AXLES (F/R)	SPUR GEAR	RADIO SYSTEM	PRICE*	REVIEWED
DuraTrax Axis RTR	3mm	Shielded	Universal/dogbone	Plastic	Hitec Lynx	$499	3/00
GS Racing Storm RTR	3mm	Shielded	Universal/dogbone	Steel	JR XR3	$560	11/01
Hot Bodies Lightning RR	3mm	Shielded	Universal/dogbone	Steel	HB	$420	9/02
OFNA 9.5 MBX RTR	3.18mm	Shielded	Universal/dogbone	Steel	Airtronics Blazer Sport	$515	2/03

*Price varies with dealer.

track test

1/10-SCALE NITRO by Steve Pond

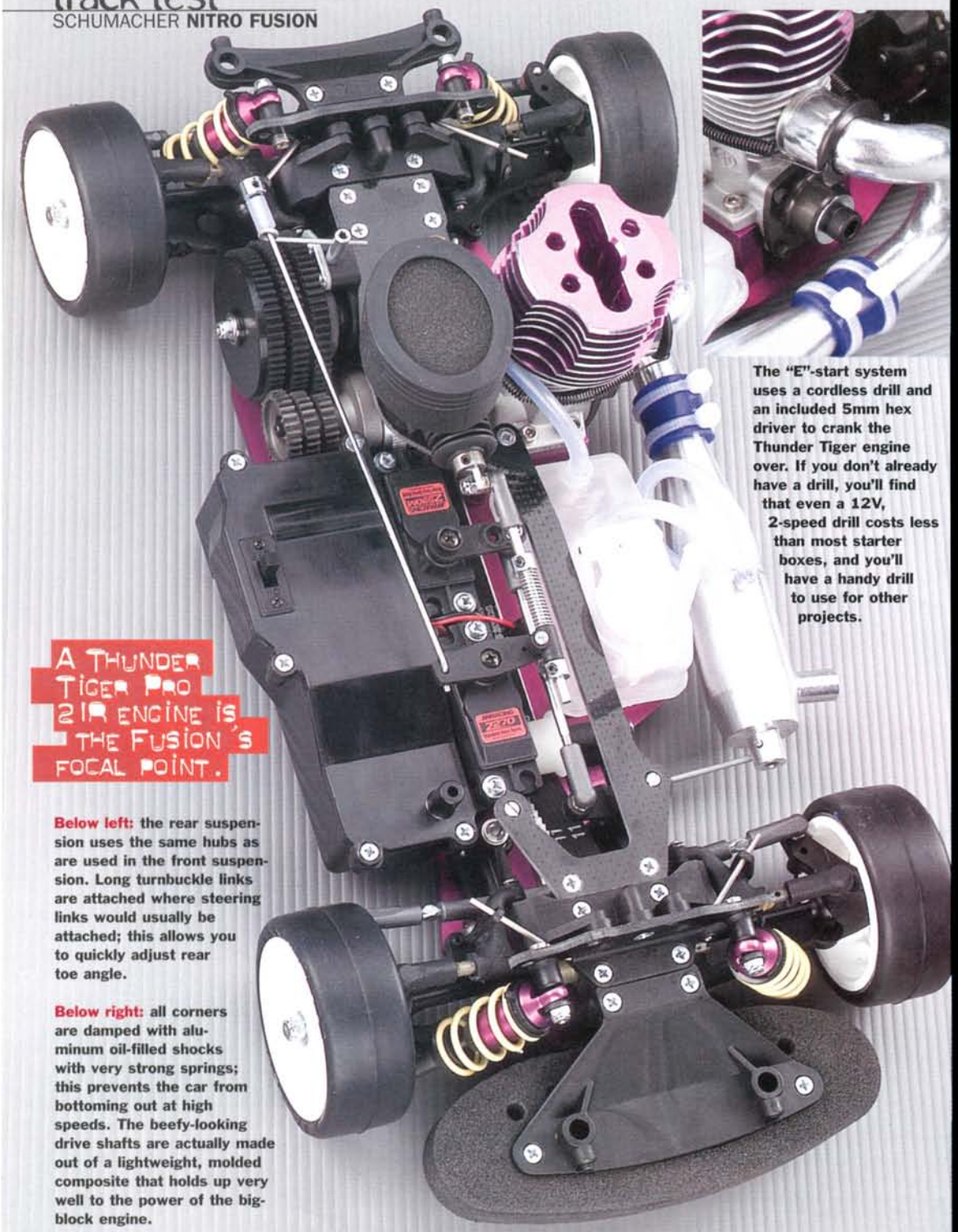
Schumacher **Nitro Fusion**



Touring's 75mph King of Speed

IT'S THE SAME IN RC AS IN ALL OTHER MOTOR SPORTS: expensive cars can go faster, and that's the inspiration behind the saying, "Speed costs money; how fast do you want to go?" Schumacher takes issue with the notion that speed costs, and it shows this with the introduction of its long-awaited Nitro SST Fusion sedan. The Fusion not only comes stuffed from the factory with a Thunder Tiger Pro 21R engine (making it the only big-block-powered 1/10 sedan in RC), but it also includes a 3-speed transmission and an impressive list of features. Schumacher claims a smokin' 65mph straight from the box, and with the addition of an optional included clutch bell with larger gears, the speed claim boldly jumps to 80mph. This is not scale speed or kilometers per hour; we're talking good ol' hardcore, pass-the-big-cars-on-the-freeway, real-world mph.

PHOTOS BY PETE HALL



A THUNDER TIGER PRO 21R ENGINE IS THE FUSION'S FOCAL POINT.

Below left: the rear suspension uses the same hubs as are used in the front suspension. Long turnbuckle links are attached where steering links would usually be attached; this allows you to quickly adjust rear toe angle.

Below right: all corners are damped with aluminum oil-filled shocks with very strong springs; this prevents the car from bottoming out at high speeds. The beefy-looking drive shafts are actually made out of a lightweight, molded composite that holds up very well to the power of the big-block engine.

The "E"-start system uses a cordless drill and an included 5mm hex driver to crank the Thunder Tiger engine over. If you don't already have a drill, you'll find that even a 12V, 2-speed drill costs less than most starter boxes, and you'll have a handy drill to use for other projects.

DATA CENTER

VEHICLE TYPE 200mm 4WD nitro sedan with a .21 (3.5cc) engine
BEST BUYER Experienced nitro enthusiast
RATINGS (poor, satisfactory, good, very good, excellent)
Instructions Good
Parts fit and finish Very good
Durability Good
Overall performance Very good

SPECIFICATIONS

MANUFACTURER Schumacher Racing
MODEL Fusion
DISTRIBUTED BY Schumacher USA
SCALE 1/10
PRICES $470 (RTR), $370 (ARR) Vary with dealer

DIMENSIONS
Wheelbase 10.25 in. (260.4mm)
Width 7.85 in. (199.5mm)

WEIGHT
Total, as tested 64.3 oz. (1,823g)

CHASSIS
Type Flat plate with countersunk screw holes
Material 3mm anodized aluminum

DRIVE TRAIN
Type Single 11mm belt
Primary 21/25/29T clutch-bell gears; 65/61/57T spur gears
Drive-train ratio 1.8:1
Final drive ratio 5.57 (first gear), 4.39 (second gear), 3.54 (third gear); w/optional high-speed clutch bell–4.87:1 (first gear), 3.92:1 (second gear), 3.21 (third gear)
Drive shafts Composite CV-type
Differentials Ball type with hard-anodized aluminum outdrives.
Bearing type Metal shielded

SUSPENSION
Type Double A-arm adjustable w/turnbuckle upper arms
Shocks Anodized aluminum w/foam volume compensators and spring preload clips

WHEELS
Type 24mm, one-piece, 12-spoke plastic

TIRES
Type Schumacher hard-compound SST slicks

ENGINE AND ACCESSORIES
Engine Thunder Tiger Pro 21R with "E" start
Carburetor 2-needle slide with 8mm bore
Exhaust Rear-exhaust header with two-piece aluminum tuned pipe
Fuel tank 75cc, primer-less tank with flip-top filler cap

KIT FEATURES

CHASSIS. The Fusion is built atop a 3mm-thick, purple-anodized aluminum chassis plate with countersunk screw holes. The only screws that hang slightly below the chassis are the large engine-mounting screws.

A large radio box is welcome and has room for receivers of most sizes. The box isn't waterproof, but the lid is held tightly by five screws and will protect the receiver against anything short of submersion. The box can be removed by popping the throttle and steering ball ends, removing four screws and slipping the brake Z-bend off the throttle servo. It takes about 1 minute to remove all the radio gear for proper chassis cleaning and maintenance.

DRIVE TRAIN. The Fusion has a unique drive train, starting with the 3-speed transmission. The transmission has preset weights and springs in both of the cam-type shifter mechanisms to ensure good shift points without the need for adjustment. According to Schumacher, the transmission was tested extensively to ensure that it won't need much attention. Just behind the transmission on the transmission shaft is a single fiberglass disc brake.

The 3-speed transmission drives another unique drive-train component: an 11mm-wide single drive belt. The belts in typical nitro sedans are 5 to 6mm wide—half the width of the Fusion's belt. The wide belt wraps around the diffs at either end of the car and hugs the chassis' center section. The belt's lower portion rides in a metal "tunnel," or guide. This helps to prevent it from being contaminated by debris, and it prevents it from locking against itself; the upper and lower portions of the belt are very close to each other for a span of about 6 inches, and contact could destroy the belt.

Ball diffs are installed at both ends. The more precise, better-performing ball diffs are better for handling, but because handling isn't likely to be a strong suit in a car with such a high center of gravity, I would prefer the lower maintenance of gear diffs. Aluminum outdrives turn the composite CV-style drive shafts that are fitted with standard 12mm hex hubs for standard touring car wheels.

ENGINE AND ACCESSORIES. A Thunder Tiger Pro 21R engine is the Fusion's focal point. It's a sport engine as far as big-blocks go, but it's potent and certainly provides more power than is typical of a 200mm sedan. The 21R is fitted with an 8mm, 2-needle slide carb that includes its own two-stage air filter, though filter oil isn't included.

This Frewer BMW M3 body is included with the Fusion; Subaru WRC 2002 and Ford F-155 truck bodies are also available. For top-speed testing, I installed a Protoform Stratus.

A key feature of the Fusion's engine is the "E" start system. The engine's backplate has been replaced by a custom plate that has a one-way bearing and a drive dog that has a 5mm hex head on the end that exits the engine. An included 5mm ball driver spins the drive dog, which drives the starter assembly. The ball driver is suitable for use in a cordless drill, and it can also be creatively adapted to an airplane-style, hand-held starter. Engine starting is an absolute pleasure with this type of system.

The Fusion's 75cc front-fill fuel tank is actually an Associated part and has a proven track record in the RC10GT. It's a little small for the .21 engine, so you'll have to refuel more frequently, but that's the small price you pay for having such a speed demon.

SUSPENSION AND STEERING. Schumacher sedan fans will recognize the Fusion's suspension parts from the company's electric cars. Double A-arms are installed at all corners. The lower arms are attached to the

BUILDING & SETUP TIPS

The Schumacher Fusion is available in two versions: almost ready to run (ARR) and ready to run (RTR). I tested the ARR Fusion, which I preferred. In the RTR version, the car's power and speed push the limits of the included basic Airtronics Blazer AM radio and standard servos. The ARR Fusion's chassis is completely assembled and ready for the installation of your radio gear. The included Frewer body is not painted or trimmed, but decals and window masks are provided.

RADIO. Use FM radio gear. The Fusion's speed and quick acceleration can put a lot of real estate between the transmitter and receiver in just a few seconds, so the extra glitch-resistance and operating range of an FM system are especially welcome. Also consider upgrading to a competition-quality steering servo; you don't need one with a lot of torque, but speed and precise centering are musts. At the speeds the Fusion can reach, even slight steering "slop" can result in a large diversion from your intended course.

SERVO INSTALLATION. The servos are mounted on the inside edge of the radio box, and it's easier to install them when the radio box is out of the car. To make things even easier, remove the four screws that hold the radio box on the chassis. Just remember that the steering- and throttle-servo positions are the opposite of what you'll find in most cars: the steering servo is mounted at the rear, and the throttle servo is in the front. Note that Schumacher includes a throttle-return spring but not a throttle servo horn, but you'll need a longer than usual servo horn to install the return spring properly.

RECEIVER AND BATTERY INSTALLATION. Cushion the receiver and its battery with foam, or secure them inside the radio box with servo tape. Don't just throw your gear into the radio box and screw the lid into place; if you let your gear rattle around inside the box, you're asking for trouble.

RECEIVER PACK. The Fusion's receiver can't tell the difference between 4, AA alkaline cells and a 5-cell rechargeable pack because its best trick is going straight, but I recommend a rechargeable pack for safety. Even a small impact can jar one of the alkaline cells out of the battery holder just enough to allow a runaway. For that reason alone, go with a rechargeable pack that is completely soldered and shrink-wrapped.

YOU'LL NEED

- 2-channel radio system—FM recommended
- Two servos—preferably an upgraded steering servo
- Cordless drill for the starting system
- Polycarbonate paint
- 20- to 30-percent-nitro fuel

FACTORY OPTIONS

- Purple aluminum diff mounts—item. no. U2462
- Purple aluminum hub carriers—U2163
- Spring-tuning set—U1921
- Kwik Klips (pack of 8)—U2251
- Threaded shock bodies—U2297
- Alloy shock-seal housings—U1818
- Steel drive shafts—U2151
- Tungsten-carbide thrust bearing for diff—U1954
- Tungsten-carbide diff balls—U2459
- Clutch bells—U2567 (24/28/32T), U2491 (15/19/23T)

TIRE GLUING. The Fusion is simply too fast to take shortcuts on preparation here. Thoroughly clean the tires and wheels with motor spray, or another appropriate oil-free solvent, wash your hands so greasy fingerprints won't compromise your glue job, and don't use accelerator to get the CA tire glue to dry more quickly; it weakens the glue. I recommend Team Losi Tread Lock tire glue. It's the strongest stuff I've ever used.

chassis with hinge pins, and the outer ends of the arms snap over a threaded ball in the steering hubs. The upper arms have a turnbuckle adjuster to facilitate camber-angle adjustment. All the upper arms have an optional roll-center mounting position for the upper arm's inner hinge pin, and there's also an optional mounting position on the hubs where the outer ends of the upper arms are attached.

The aluminum shocks feature a bottom-loading cartridge design that has double O-ring seals and foam volume compensators instead of bladders. Spring preload is adjusted by adding or removing caster clips. Two shock-mounting positions are available for the top and bottom of each shock.

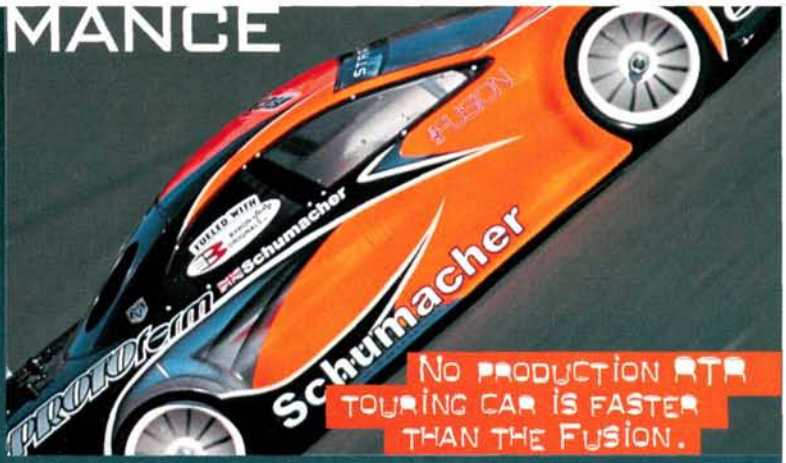
The same steering hubs are used at all the corners of the suspension. In the front, the hubs allow steering movement; in the rear, the hubs are fixed with an adjustable toe-angle link. They're much like steering links, but they aren't connected to a servo; they're attached to a solid mount that is centered behind the rear bulkheads.

The steering system is a typical double-bellcrank system with an adjustable servo-saver installed in the left side bellcrank. All the steering links feature turnbuckle adjusters.

BODY, WHEELS AND TIRES. Schumacher offers the Fusion with a BMW M3, a Subaru WRC 2002, or a Ford F-155 body. The wheels are one-piece 12-spoke models with really hard rubber Schumacher SST slick tires. The tires don't have any inserts, but the folks at Schumacher say the Fusion doesn't need them because the tires are really hard.

PERFORMANCE

Schumacher's factory bodies look sharp, but they don't seem stable at high speeds, so I opted for a Protoform Dodge Stratus 2.1 body painted by Josh Theil.



I tested the Fusion at Sikorsky Memorial Airport, CT—my favorite venue for speed demons that can eclipse the mile-a-minute mark. Schumacher claims high velocities in stock and modified trim, and the long, straight runways at the airport give us the best opportunity to reach maximum speed.

Firing up the Thunder Tiger engine is incredibly easy with the "E" starting system. I simply chucked the supplied 5mm ball driver into a 12V Makita cordless drill and cranked the engine for not much more than a couple of seconds; it fired right up. I love this starter! Anyway, I had already broken in the engine on our office parking lot, so I let the Fusion rip. I made the typical fuel-mixture-needle adjustments; the mixture usually needs to be richer for high-speed running. After half a dozen passes with the stock gearing, the Fusion had worked its way up from 60mph during the initial run to 65mph. The car accelerates very strongly, given its tall gearing, and it shifts consistently, though a little early, in my opinion. It was much more stable than I had anticipated.

The real nut check came after I had switched the clutch bell to the 80mph (reported) gearing. The taller gearing shows its effects on the bottom end and makes it slightly more difficult for the Fusion to pull away from a standstill, but it's still remarkably quick off the line. The first pass clicked off 72mph. This is blazingly fast, but still short of the 80mph claim. The engine's exhaust note clearly fell off as it tried to push the taller gearing while punching a bigger hole in the air. After a few attempts to get the fuel mixture dialed in to perfection, I got it up to 74.6mph, but that was the fastest I could register with the box-stock Fusion (sans the stock body).

Handling is marginal, as I expected, but the Fusion isn't likely to see much cornering—U-turns at the end of the parking lot and mostly straight-line runs. The included hard-rubber tires lack side bite to avoid having too much grip; excess traction and high speeds don't mix. Install softer tires if you want to improve handling at lower speeds, but think twice before you use them at high speeds. Even with the hard-compound tires, the Fusion's handling is well tuned for its intended purpose. It shows a minor understeer that helps to keep it going straight. Hauling the car to a stop is fairly routine if you set your throttle-channel endpoints properly, but the powerful brake and hard-compound tires make it easy to induce a spin.

LIKES

- High-quality, reliable engine is easy to tune.
- Love the hex-drive "E" start system.
- Modular radio box allows quick and easy removal of all electronics.

DISLIKES

- Turnbuckles in upper suspension arms rust easily.
- Would like metal drive shafts instead of the molded-plastic units.

THE VERDICT

Few cars on the market are more "single-purpose" than the Fusion. Yes, it can corner and do all the other things that other touring cars do, but it was clearly designed with a single objective: getting from point A to point B as fast as possible. And with that objective, Schumacher has created an unqualified success; there is no faster production RTR car. How fast is it? With resounding and unequalled certainty, I can say 75mph!

TEST GEAR

Byron Race 3000 30-percent-nitro fuel

Byron fuel powered the first-, second- and third-place drivers in the most recent 1/8 On-Road IFMAR World Championships, and it's unquestionably potent, high-quality fuel. I used the 30-percent-nitro Race 3000 blend for my testing. According to Byron's specs, this blend uses a 60:40 mixture of castor and synthetic oils for a total lubrication content of 11 percent. The castor content is higher than that of Byron's other blends for extra lean-run protection.

Additional items used

JR Racing XR3i FM radio

JR Racing Z590M and Z270 steering and throttle servos

Trinity Nitro Metal Hydride receiver pack

SOURCE GUIDE

SCHUMACHER USA (813); racing-cars.com.

JR RACING distributed by Horizon Hobby (217) 355-9511; horizonhobby.com.

TRINITY PRODUCTS INC. (732) 635-1600; teamtrinity.com.

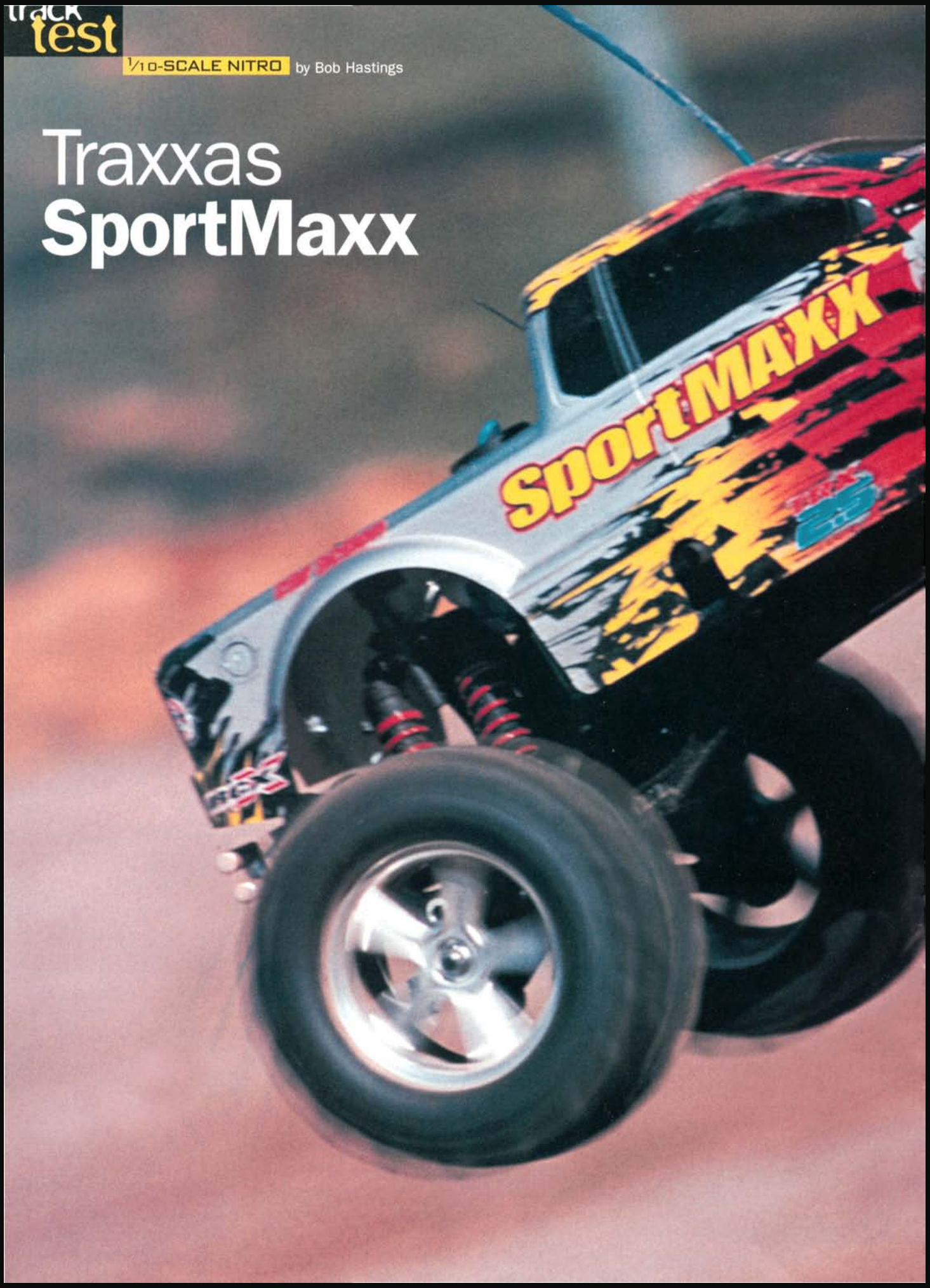
BYRON FUEL (712) 364-3165; byronfuels.com.

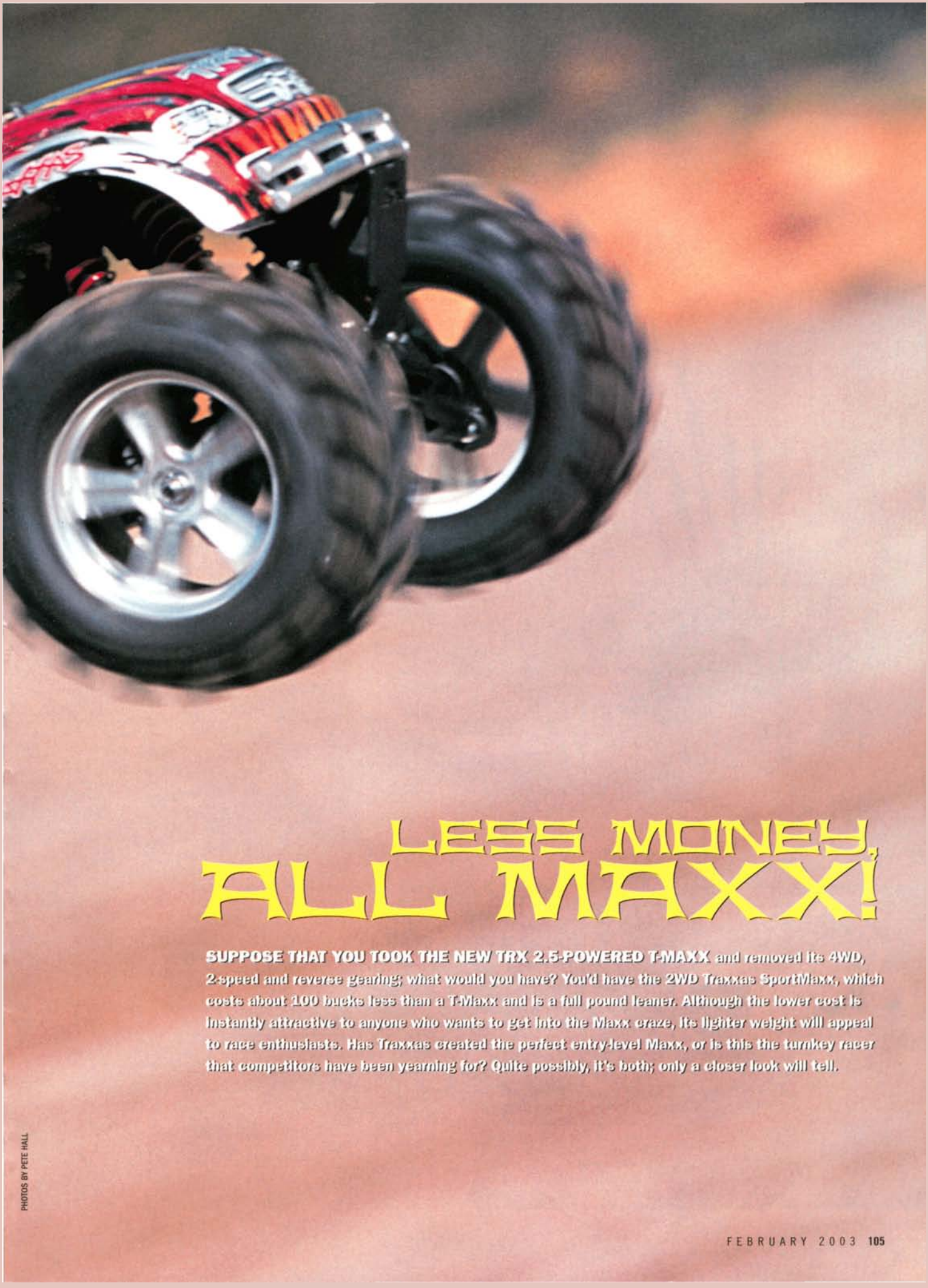
PROTOFORM INC. distributed by Pro-Line (909) 849-9781; pro-lineracing.com.

track test

1/10-SCALE NITRO by Bob Hastings

Traxxas SportMaxx



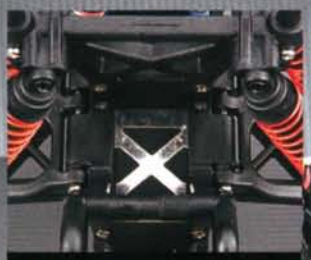


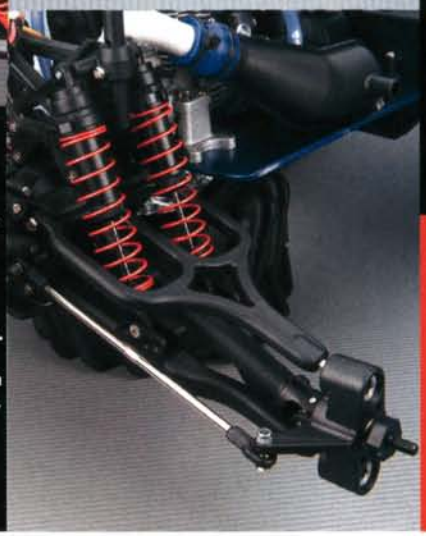
LESS MONEY, ALL MAXX!

SUPPOSE THAT YOU TOOK THE NEW TRX 2.5-POWERED T-MAXX and removed its 4WD, 2-speed and reverse gearing; what would you have? You'd have the 2WD Traxxas SportMaxx, which costs about 100 bucks less than a T-Maxx and is a full pound leaner. Although the lower cost is instantly attractive to anyone who wants to get into the Maxx craze, its lighter weight will appeal to race enthusiasts. Has Traxxas created the perfect entry-level Maxx, or is this the turnkey racer that competitors have been yearning for? Quite possibly, it's both; only a closer look will tell.

PHOTOS BY PETE HALL

The large, 37mm-diameter fiber brake disc easily stops the rear wheels. The front U-joint on the transmission is ready to accept a drive shaft.





Left: the SportMaxx is powered by the same TRX 2.5 engine that is so efficient in the T-Maxx. **Above:** looking down at what would usually be the front diff: Traxxas has installed a metal lower bulkhead brace and a composite upper bulkhead brace in case you decide to upgrade to 4WD. **Right:** the WideMaxx driveline from the new T-Maxx has been carried over to the SportMaxx. It has the larger telescoping axles, hardened diff gears, multiple shock-mounting positions and large, 3.5mm turnbuckles.

DATA CENTER

VEHICLE TYPE 1/10-scale 2WD nitro-powered monster truck
BEST BUYER Any level of nitro-monster-truck enthusiast

KIT RATINGS (poor, satisfactory, good, very good, excellent)
Instructions Excellent
Parts fit/finish Very good
Durability Very good
Overall performance Very good

SPECIFICATIONS

MANUFACTURER Traxxas
MODEL SportMaxx
SCALE 1/10
PRICE $325
(Varies with dealer)

DIMENSIONS
Wheelbase 11.81 in. (300mm)
Width 16.25 in. (414mm)
Length 19.12 in. (486mm)

WEIGHT
Total, as tested 127.9 oz. (3,628g)

CHASSIS
Type 3mm plate
Material Blue-anodized 6061 T-6-aluminum

DRIVE TRAIN
Type 3-gear transmission
Primary 20T clutch bell/72T spur
Transmission ratio 2:1
Final drive ratio 20.53:1
Drive shafts Telescoping universal axle
Differentials Planetary-gear
Bearing type Metal-shielded

SUSPENSION
Type Upper and lower A-arms with adjustable pivot balls
Damping Plastic-body, oil-filled

WHEELS
Type Nylon 5-spoke with satin finish

TIRES
Type Maxx Terra

ENGINE AND ACCESSORIES
Engine Traxxas TRX 2.5
Carb 2-needle slide
Exhaust Aluminum round-port header with composite tuned pipe
Fuel capacity 125cc

LESS WEIGHT MEANS A BETTER POWER-TO-WEIGHT RATIO.

KIT FEATURES

CHASSIS. The SportMaxx has a 3mm chassis that's identical to that of the recently revamped T-Maxx. The thicker, stronger and stiffer blue-anodized, 6061 stamped-aluminum plate shows the cutouts for the old Maxx's bottom exhaust exit, and it's ready to accommodate the reverse-shift servo if you want to install that option. Composite, ladder-style braces provide additional longitudinal stiffness to the chassis.

DRIVE TRAIN. The SportMaxx uses the same 20/72 clutch-bell and slipper-equipped spur combination as the T-Maxx as well as its enclosed transmission case. Instead of the clutches and gears that make up the T-Maxx's reversing 2-speed, Traxxas installed a very simple, efficient, single-speed, forward-only tranny. The 3-gear unit is supported by bearings (a full 23 in the drive train), and it weighs significantly less than its older sibling: 113 grams versus 204 grams. Less weight means a better power-to-weight ratio and a reduction in the rotating mass of the driveline. A 37mm fiber disc pad provides rear-wheel braking, and the front U-joint will accommodate future 4WD plans.

Above: the SportMaxx tranny is more than 3 ounces leaner without the reverse and 2-speed components inside. Right: the SportMaxx was given a beauty makeover in the wheel department; there wasn't anything wrong with the old 5-spokers, but these new ones are cool!

A telescoping, heavy-duty, plastic drive shaft delivers power to the rear planetary-gear differential. The hardened-steel ring and pinion gears were designed to withstand the power of the TRX 2.5 and the rigors of off-road abuse. Sliding universals take the torque to the rear wheels, and the plastic sliders allow greater suspension travel over dogbones and fixed-length universals.

SUSPENSION AND STEERING. Traxxas uses the WideMaxx suspension in the SportMaxx as it does in the new T-Maxx. It's an inch wider than the previous one and is significantly beefier. The eight plastic-body, coil-over Ultra shocks are fluid damped; they have three upper mounting positions on the shock tower and four positions on the lower suspension arm. Pivot balls allow camber and track-width adjustments, and clip-type spacers allow 4, 7, or 10 degrees of caster angle. Strong 3.5mm turnbuckles allow front and rear toe adjustments, and a bushing-supported bellcrank with a heavy-duty Traxxas 2055 servo is used for steering.

ENGINE AND ACCESSORIES. I've run a few gallons of nitro through previous test vehicles equipped with the TRX 2.5 engine, and it's now a favorite of mine. Once you've completed the ABC powerplant's recommended break-in procedure, you're rewarded with reliable idling and ballistic revving with smooth throttle transition at all rpm. The 2-needle, composite slide carb is easy to tune and prevents fuel from boiling in the intake (as may occur with a hot aluminum-body carb).

The 2.5cc engine's "tuned" air filter looks similar to a hot-rod's high-velocity stack; its conical design optimizes airflow to the carb. Its other features include a knife-edged, machined connecting rod; an oversize cast-aluminum heat-sink head with protective top; a lightweight piston with a longer connecting rod; and an integrated-pilot-shaft (IPS) crank with a large-diameter port. The composite tuned pipe was created specifically for the 2.5, and it looks like those on competition motocross bikes.

The SportMaxx also includes the revamped "smart" EZ-Start 2 that is stronger, more reliable and easier to use. The wand-type controller fully encloses the starter battery, and new circuitry senses whether the starter motor is drawing too much current (because of a flooded engine, for example) and will shut the system down to prevent it from being damaged. Other features are an elastomer "cush" drive to protect the starter gears from damage and LEDs that indicate motor and glow-plug status.

BODY, WHEELS AND TIRES. Although its styling is similar to previous Maxx designs, the six-color ProGraphix paint schemes and body are new. The shell is precut and drilled, and you have the choice of blue, red,

ELECTRONICS & ACCESSORIES

INCLUDED

TQ-3 TRANSMITTER AND RECEIVER

It would have been completely understandable if Traxxas had decided to install its 2-channel radio in the SportMaxx, but it opted instead to include the T-Maxx's 3-channel system. Now, those who decide to install the reverse upgrade or a servo-toggled accessory won't have to buy a new radio. Along with a rocker switch for the third channel, the TQ-3 includes an LED battery meter and the usual trim knobs.

TRAXXAS 2055 STEERING SERVO

Steering the 5.75-inch tires isn't easy, but the 2055 servo handles the job well with a claimed torque output of 80 oz.-in. Don't be surprised if the servo has trouble moving the wheels when the truck is stationary; with all that rubber on the ground and the truck's soft servo-saver, the front wheels will barely swing to the left or right. But as soon as the SportMaxx starts to roll, the servo has all the power you'll need to muscle those meats in the right direction.

TRAXXAS 2018 THROTTLE/BRAKE SERVO

The 2018 is Traxxas' "standard" servo, and it's easily up to the task of throttle and brake duty; it can lock the rear wheels on command.

TRAXXAS—THE MOVIE

Traxxas now includes a DVD with each of its TRX 2.5-powered vehicles. Kit videos have been done before, but the Traxxas vid is by far the best in terms of production and depth of information. Every interaction with the truck—from loading the batteries, threading the antenna and tire gluing to engine break-in and troubleshooting—is covered in detail in this professional production. Watching this DVD ensures that even a rank beginner will be successful the first time out.

YOU'LL NEED

- 12 AA batteries
- 6-cell, stick-type starter battery
- Charger for starter battery
- Tire glue
- 20-percent-nitro fuel

FACTORY OPTIONS

- Reverse module—item no. 5194x
- 2-speed module—5192x
- 4WD module—5191x
- 7075 T-6 4mm chassis—4922X
- Anodized-aluminum
  - —engine mount—4960x
  - —pivot-ball caps—4934x
- Aluminum
  - —bulkheads (F/R)—4930x/4929x
  - —bumpers—4935x
  - —hex-wheel hubs—4954x
  - —Big Bore shocks—4962
  - —steering/shift servo mounts—4918x
  - —throttle-servo mounts—4919x
  - —transmission skidplate—4947x
- Differential spool—4981x
- Suspension-pin set (stainless steel/titanium) —4939x/4939r
- Hard-anodized-aluminum pivot balls—4933x
- Titanium turnbuckles (94/105mm F/R)—2338x/2339x

green and silver for a main body color. You can also opt for a body with a clear center section so you'll be able to personalize it. If you have a tough time deciding on a color, visit Traxxas.com; its interactive color selector lets you virtually "paint" a body online to see how your finished color scheme would look. As well as the attractive new scheme, the most notable style change is the large, molded sill between the front and rear fender wells. This makes the body look more aggressive and adds rigidity, too.

The SportMaxx's wheel treatment immediately differentiates it from its 4WD siblings. The one-piece nylon rims have five tapered spokes and a metallic finish; a raised ridge on the outer portion of each spoke further enhances the style. In a return engagement from the Maxx fleet, Traxxas' multipurpose Maxx Terra tires deliver a nice mix of traction and good overall wear with their chevron pattern.

PERFORMANCE

The first thing you'll notice is how smoothly the drive train operates. Since the SportMaxx doesn't have an internal clutch transmission and a lot of rotating mass, there's none of the clutch snatch that's often encountered with the T-Maxx. (This is the tendency for the clutches to alternately grab and release when engine rpm nudges the engagement point.)

Power from the free-revving TRX 2.5 accelerates the truck with ease and spools it up to its 30.4mph top speed in short fashion. There's definitely enough reserve power to gear up the SportMaxx for more speed, especially when you consider that although the T-Maxx is heavier, it can top 40mph with the same TRX 2.5 engine.

If you drive the SportMaxx as if it's a big 2WD stadium truck, you'll be amazed at how well it handles. Unlike the T-Maxx, which has the benefit of its front wheels to pull it out of a corner, the SportMaxx experiences a good deal of on-power push. I found it easiest to apply a little brake before turns to plant the front end and to help pivot the rear; as soon as the corner is established, I smoothly roll on the throttle to blast out the other side. If you use too much power when you exit a turn, the TRX 2.5 can easily loop the truck, but its throttle response is so linear that it will make even the biggest hacks look smooth!

Running across a surface that has any traction lets the SportMaxx really show off its lighter chassis and enormous power. Even if it's already rolling, a clamp on the throttle immediately lifts the front end in a very gratifying, bumper-scraping wheelie. Go to full clamp from a standstill, and the SportMaxx can be flipped right onto its roof.

IF YOU DRIVE THE SPORTMAXX AS IF IT'S A BIG 2WD STADIUM TRUCK, YOU'LL BE AMAZED AT HOW WELL IT HANDLES.

Without the pull from the front wheels, this truck doesn't have the low-speed climbing prowess of the T-Maxx; that isn't meant as a knock as much as it is an observation (like me saying that I didn't like the hamburger because it didn't come with cheese). If you're into climbing, you'll probably want to look into the 4WD upgrade. If big speed and tall ground clearance will satisfy your off-road needs, you'll find this truck amazing.

The SportMaxx's disc brake is a hefty 37mm in diameter; since it only has to stop the rear wheels, the stock servo can easily lock the rears if you apply too much brake pressure. A benefit of the rear-only brakes is that you can't mistakenly endo the truck if you brake too abruptly.

LIKES
- Great power and handling.
- Easily upgradable.
- More affordable.

DISLIKES
- Tires aren't glued at factory.

THE VERDICT

Who is the SportMaxx for? Anyone who's looking for a big monster that's a blast to drive will certainly find it a worthwhile investment. If you're a current-generation T-Maxx owner who has been toying with the idea of upgrading it to TRX 2.5 status, skip the conversions and move on over to the SportMaxx. It's a welcome arrival for those who have found that the higher admission price of the T-Maxx was outside their grasp.

Competitors who like to customize their racers will undoubtedly enjoy starting with a trimmed-down race machine. The truck suits a variety of purposes, and it will appeal to many folks for different reasons. Before the others catch on, though, I suggest that you be the first at the hobby shop to grab one.

TEST GEAR

Traxxas Top Fuel 20-percent-nitro

Traxxas recommends that you use the same fuel for break-in as you use for normal running. Its 20-percent-nitro blend provided good overall power and easy starts with the EZ-Start.

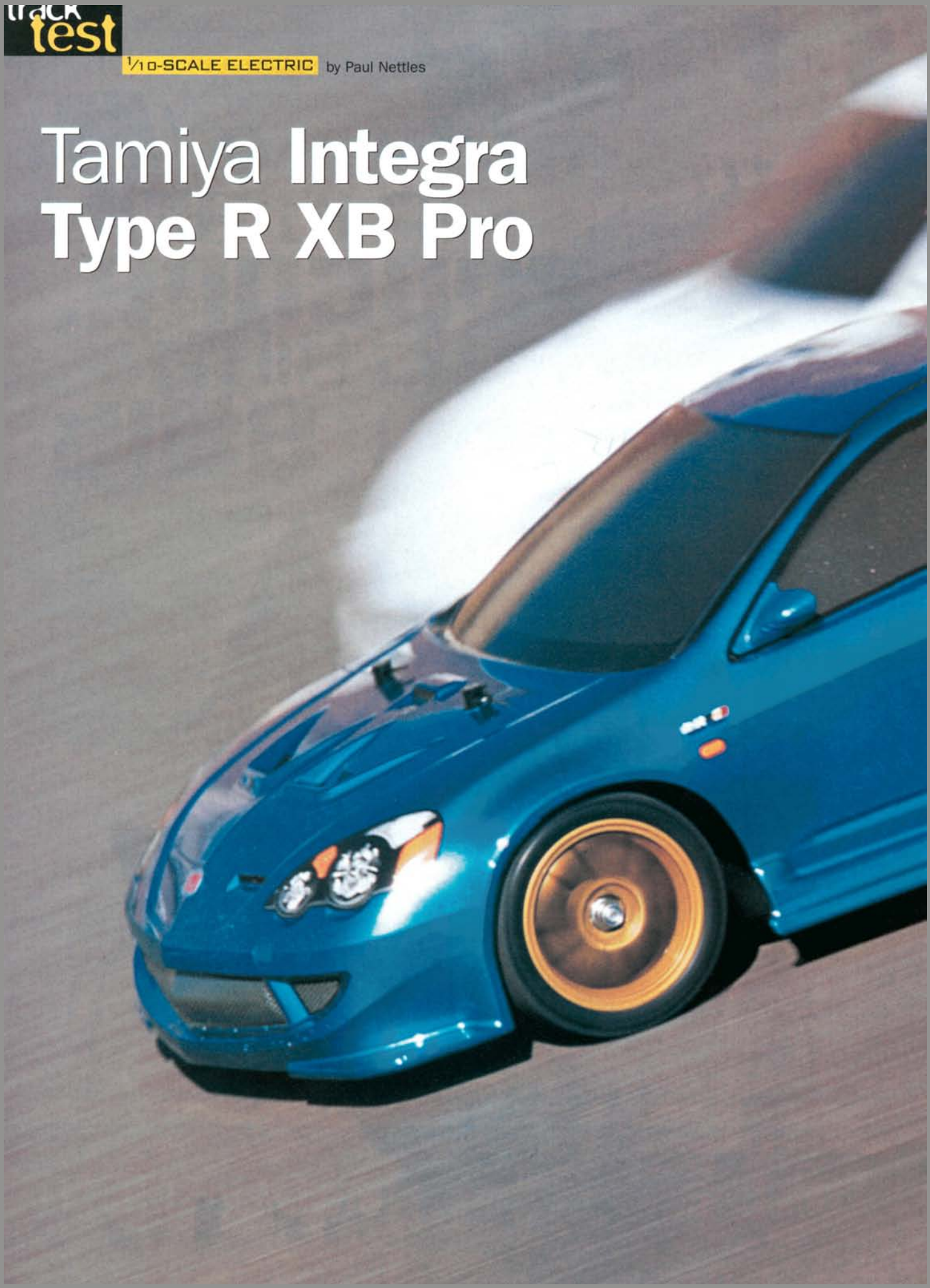
SOURCE GUIDE

TRAXXAS CORP.
(888) 872-9972; traxxas.com.

track test

1/10-SCALE ELECTRIC by Paul Nettles

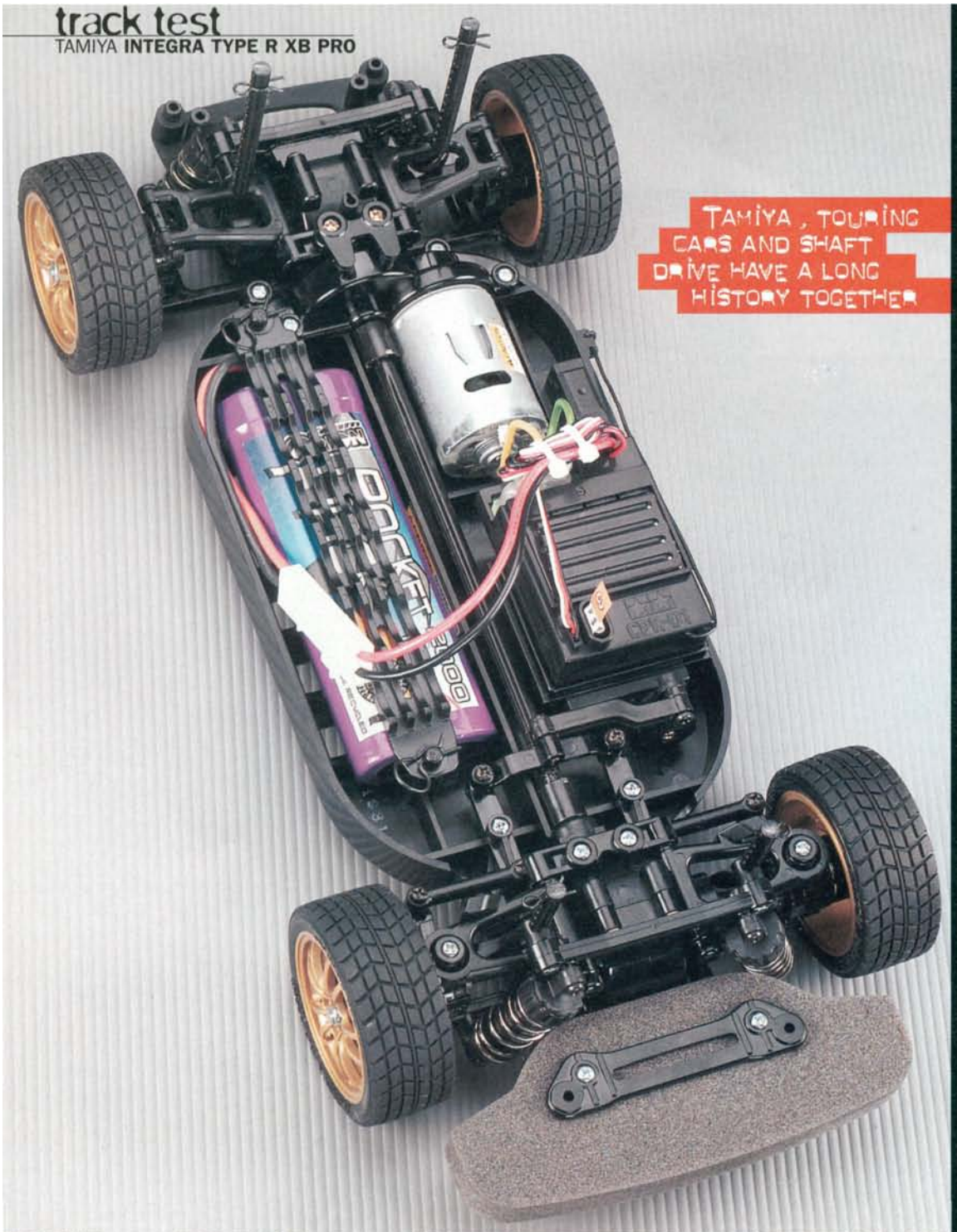
Tamiya **Integra Type R XB Pro**



Accurate Acura with **RSX-appeal**

TAMIYA'S NEWEST READY-TO-RUN HAS ARRIVED in the form of the Acura Integra Type R (more commonly known in the U.S. as the Acura RSX). The kit is the first in Tamiya's electronic-speed-control-equipped XB (eXpert Built) Pro series, and it comes with a completely new chassis designation—the TT-01. When you open the box, you'll be greeted with a completely ready-to-run, painted and decaled car; all that is left to do is to add a charged 6-cell battery pack, slide 8, AA batteries into the included radio, and you'll be ready to drive.

PHOTO BY PAUL NETTLES



DATA CENTER

VEHICLE TYPE Ready-to-run 4WD Electric touring car
BEST BUYER Beginning RC modeler
KIT RATINGS (poor, satisfactory, good, very good, excellent)
Instructions Satisfactory
Parts fit and finish Very good
Durability Very good
Overall performance Good

SPECIFICATIONS

MANUFACTURER Tamiya
MODEL Acura Integra Type R XB Pro
SCALE 1/10
PRICE (varies with dealer) $185

DIMENSIONS
Wheelbase 10.125 in. (257mm)
Width 7 in. (137mm)

WEIGHT
Total, as tested 49 oz. (1,361g)

CHASSIS
Type Molded, semi-tub
Material Plastic

DRIVE TRAIN
Type Shaft
Primary 91-tooth plastic spur gear/16-tooth steel pinion
Transmission ratio 2.6:1
Drive shafts (F/R) Plastic dogbones
Differentials Bevel gear
Bearing type Plastic and metal bushings

SUSPENSION
Type (F/R) Upper and lower wishbone arms
Shocks Coil-spring, undamped

WHEELS
Type One-piece, gold, 10-spoke

TIRES
Type Hard-compound treaded rubber

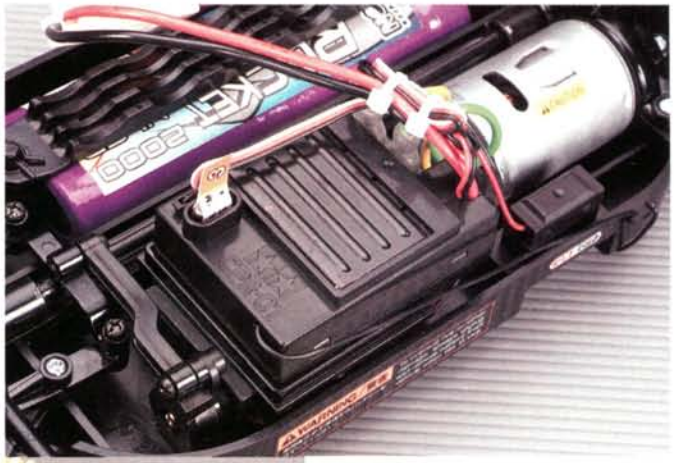
Left: undamped plastic shocks support the chassis. Inexpensive plastic-body, oil-filled shocks can be added later, or you can go for a set of Tamiya's trick low-friction aluminum jobs.

Right: instead of the usual C-carriers and upper links, the front suspension uses upper and lower wishbones to capture the steering knuckles. Note the reinforcing ribs on the steering knuckle and the thick stops molded into the suspension arms.

KIT FEATURES

CHASSIS. With its new TT-01 chassis, Tamiya has reconfigured the basic elements of its TB-01 shaft-drive chassis with an eye toward reduced complexity and easy assembly on the production line. The TT-01's shaft-drive system has been placed dead center in the chassis; the electronics package is on the left, and the battery pack (not included) is to the right. Interestingly, the plastic tub-style chassis has slots to accommodate a side-by-side battery-pack configuration; entry-level enthusiasts rarely use that battery setup. Odd, indeed—unless Tamiya has some serious hop-up plans for the TT-01.

If you can get this box open, you can handle an XB Pro. It's ideal for complete newcomers to RC.



Above: unlike Tamiya's previous XB cars, which used mechanical speed controls, the XB Pro includes an integrated receiver/electronic speed control. It's a big piece of gear, but remember: it takes the place of two components. Left: the TT-01 mates Tamiya's classic 3-gear differential with oversize plastic outdrives and thick plastic dogbones. Below: nice wheels! You can even see lug nuts on them—Tamiya detail at its best.

DRIVE TRAIN. Tamiya, touring cars and shaft drive have a long history together; Tamiya's TA-01 Nissan Skyline, circa 1991 (kit no. 99, to be exact), was the first 4WD, 190mm touring car. It used the same shaft-drive system as had served reliably in the Manta Ray off-road buggy and other vehicles. Tamiya has returned to shaft drive with the TT-01, and although this shaft system is similar to that found in the TB-01, the main shaft here is plastic, not steel. With the included silver-can, standard, 540 motor, we doubt that any power loss will be noticeable with the plastic drive shaft.

If you decide to upgrade in the future to a hotter motor, it's likely that flexing would be an issue. Let's hope that a heavy-duty drive shaft will soon be offered as an option. Speaking of upgrades, one of the best to start with would be to add a set of ball bearings to the car—in place of the stock mix of plastic and Oilite bushings.

The drive shaft has a plastic bevel pinion at each end that spins the front and rear gear differentials. Each diff contains Tamiya's unbreakable (in our experience) 3-gear internals and has a pair of plastic outdrive shafts that mate with enormous plastic drive cups. The cups are extra large because the TT-01 uses plastic dogbone axles, which are oversize compared with the usual steel units to provide sufficient strength.

SUSPENSION AND STEERING. The TT-01 has 4-wheel independent suspension with upper and lower wishbone arms that provide 1 degree of negative camber in the front and rear. Chunky stops are built into the front arms to prevent the steering arms from being overextended in a crash. Plastic, coil-over shocks handle the suspension action. The shocks are very basic: no oil, no pistons, no damping.

The steering system is simple as well; the twin plastic bellcrank arrangement has fixed tie rods that hold the steering arms at zero toe-in. All the steering joints pivot on smooth-shouldered screws; there aren't any ball cups to pop off.

BODY, WHEELS AND TIRES. What else can you say about Tamiya's equipment in this category? The company has built a stellar reputation on its

INCLUDED ELECTRONICS & ACCESSORIES

TAMIYA EXPEC TRANSMITTER. The TT-01 is the first to include Tamiya's new Expec radio system, which replaces the AdSpec unit that was included with previous XB kits. The transmitter is a basic unit that gets the job done with a steering-reverse switch, throttle- and steering-trim adjusters and a groovy LED light (sorry, no dual-rate adjustment). Signal strength is strong; I didn't encounter any range problems when I tested the car from one end to the other in a large industrial parking lot.

YOU'LL NEED
- Transmitter batteries (8, AA alkalines)
- 6-cell battery pack
- Charger

FACTORY OPTIONS
- Ball-bearing set—Item no. 53497

TAMIYA CPR-01 ESC/RECEIVER. It may sound like something that belongs in an ambulance, but the CPR unit is actually an integrated speed control and receiver. As ESCs go, it's strictly a no-frills affair, but it's light-years ahead of the clunky, maintenance-intensive mechanical speed controls that come with most entry-level electric vehicles.

TAMIYA SP-3003 SERVO. This basic, "standard" servo takes care of the steering duties, and it has all necessary power to do the job (about 40 oz.-in., in case you were wondering).

ability to produce the most scale-looking body sets the RC industry has ever seen, and the TT-01's Integra shell is yet another example. A huge bonus with Tamiya's XB series is that the cars come with the paint and decal work already done for you.

The tire choice suits the car well; the firm, treaded tires look scale and will last for quite a while. Tamiya doesn't glue them to the split-spoke wheels for you, but they snap onto the rims securely enough to stay put without glue. When you're ready for new rubber, reuse the rims.

PERFORMANCE

THE TT-01 IS QUICK OFF THE LINE AND FAST ENOUGH TO IMPRESS FIRST-TIME DRIVERS

Although we experienced RC guys might dismiss the TT-01's 540 motor as "wimpy," it's perfect for the new drivers for whom the car is really intended. But don't be too quick to think that the standard motor means it's slow. With a top speed of 15mph and a conservative 16/91 gearing, the TT-01 is quick off the line and fast enough to impress first-time drivers—with power to gear up for more speed later. What the mild motor lacks in blistering speed it makes up for in run time; it took 12 minutes to drain the Orion 200mAh Rocket Pack I used while testing.

The included electronic speed control (ESC) also contributes to the long run times, as it is much more efficient than resistor-type speed controls and allows infinitely smoother forward and reverse throttle control.

Like most 4WD touring cars, the TT-01 understeers when pushed hard into the turns, and that's a much better handling trait for beginners than a tendency to oversteer or spin out. But thanks to its firm tires and torquey motor, you can pitch the TT-01 sideways around corners like a sprint car; that never gets old.

For most parking-lot and driveway action, the undamped shocks work fine, but any sharp edges (as you might find on a sidewalk) caused the car to rebound harshly. Beginner guy won't care, but if you're used to oil-damped plushness, you'll notice.

Any car aimed at first-time drivers had better be tough, and the TT-01 is exactly that. This car can take a beating; it easily shrugged off intentional curb smacks and launches over corner dots. Aside from scuffed bodywork and the expected scrapes on the chassis' underside, the TT-01 was as ready to rumble after a day of abuse as it was when it first rolled out of the box.

LIKES

- Factory-painted and detailed
- Reliable shaft-drive system
- Electronic speed control included

DISLIKES

- Plastic drive shaft and dogbones are OK with 540 power, but probably aren't up to much more.
- Undamped shocks give a bouncy ride.

THE VERDICT

The TT-01 XB Pro in Integra Type R trim accomplishes Tamiya's goals quite nicely; it's a very attractive, highly durable and virtually maintenance free, ready-to-run 4WD electric touring car that will appeal to any sedan fan (Acura enthusiasts in particular). Tamiya's overall finish—as expected—is excellent, and if you decide to upgrade it as your skills progress, Tamiya (as well as other aftermarket manufacturers) will be right there, ready when you are.

TEST GEAR

Team Orion
2000mAh Rocket Pack

Play packs have to be able to handle beginner abuse, so Orion's Rocket Pack is built for hazard duty. Tough 2000mAh Ni-Cd cells deliver long run times and stand up to all-day running and

recharging. Orion's tightly shrink-wrapped construction, flexible silicone wire and Tamiya plug make it a perfect fit for any RTR electric car.

SOURCE GUIDE

TAMIYA AMERICA INC. (800) 826-4922; tamiyausa.com.
TEAM ORION INC. (714) 694-2812; team-orion.com.

THE COMPETITION

MODEL	CHASSIS	DRIVE TRAIN	BALL BEARINGS	DIFFERENTIALS	AXLES	SHOCKS	SPEED CONTROL	PRICE	REVIEWED
Associated TC3 RTR	Molded semi-tub	Shaft	Complete set	Ball type	Universal	Plastic, oil-filled	Electronic	$259	TC 8/01
CEN GX-1 RTR	Fiberglass	Belt/gearbox	Complete set	Bevel Gear	Dogbones	Plastic, oil-filled	Electronic	$189	TC 8/01
HPI Sprint RTR	Composite plate	Dual-belt	Complete set	Bevel Gear	Dogbones	Plastic, oil-filled	Electronic	$269	1/03
Tamiya TT-01 XB Pro	Molded tub	Shaft	Bushings	Bevel gear	Dogbones	Plastic, undamped	Electronic	$215	2/03
Traxxas 4-TEC RTR	Molded composite	Dual-belt	Drive train only	Ball type	Universals	Plastic, oil-filled	Electronic	$189	5/98

Partial listing, category is too large to include all vehicles. Prices vary with dealers. TC = Touring Car special issue.

RACER NEWS

BY GEORGE M. GONZALEZ & JASON SAMS

BIG CARS BIG WIN FOR TONY NEISINGER

Former multinational and world champion Tony Neisinger has been out of the spotlight for a few years, but his recent comeback win at the ROAR 1/8-Scale Nationals in Sun Valley, CA, proved he's still got chops. Tony ran a Zenoah-powered Lauterbacher L3 SS and beat noted 1/10 drivers David Jun and Barry Baker on his way to the big step on the podium. Longtime enthusiasts remember how Neisinger dominated the on-road scene of the early '90s; we hope to see more of Tony at future Nats. Joel, you readin' this?

SITE SEEING

We don't know what the name means, but there's plenty of stuff to check out here. Wacky RC videos, on- and off-road picture galleries and an entire section devoted to wrecked cars? We're there.

BOARD WALK

FROM THE RADIOCONTROLZONE .COM BULLETIN BOARD

False-Peak Woes

24601: I can't seem to get through a single pack without a false peak. This has happened with 1800 Ni-Cds and with the Sanyo 3000 HV NiMH. I have set the delta peaks according to the instructions. This weekend, my charger would not charge because it was too hot, even though the temp was barely over 100 degrees.

ADAM LANCIA: Try getting a computer fan from RadioShack. My charger also got really hot, but it's golden now that I have an extra fan.

CALMCYCLONE: Evidently, that "barely over 100 degrees" reading you took is too much for the electronics in that charger. Either the charger is defective, which is causing it to overheat, or you need to have a fan blowing on it.

Comm-Cutting Problems

KILRBIZZ: I just cut my first comm, and it seems my bit is skipping. Am I cutting in too far, is my angle wrong, or do I have too little power, perhaps?

BAIR: The bit should face down and to the left. The armature should turn up toward the bit. Coat the arm with a permanent-ink marker.

SYNAPSE75: Is it spinning the right way? You should use thick comm oil; it makes cutting much smoother, especially with carbide bits. Only take off 0.001 inch at a time (one hash mark). Make sure that the arm can't move side to side. Shim it if you have to.

BE HEARD! LOG ON AT RADIOCONTROLZONE.COM

Easton & Kortz WIN OFF-ROAD FUEL NATS

Miami, FL's, annual Off-Road Fuel Nationals was once again well-attended by factory pro's—especially guys in Team Losi shirts. In the truck class, Ryan Cavalieri, Adam Drake, Brian Kinwald, Phillip Atondo and Rick Hohwart all made the A-main with their Triple-XNTs, and "Pudge" Cavalieri grabbed TQ honors. A win wasn't in the cards for Team Losi, though; Team Associated's Billy Easton was able to run him down and steal the National Championship. Pudge rolled in second, and Associated's "King Richard" Saxton rounded out the top three. In 1/8-scale, Jeremy Kortz took the win with his Sidewinder-fueled Kyosho Inferno MP 7.5, with King Richard and Mark "No Nickname" Pavidis in tow and also wheeling Infernos.

Billy Easton

IFMAR GOES NITRO TOURING (finally)

Mark Pavidis

IFMAR on-road nitro racing has long been the exclusive domain of 1/8-scale and 235mm 1/10-scale cars, but touring cars are finally part of the mix. Hamilton, OH, hosted the 2002 IFMAR Nitro On-Road World Championships, and for the first time, 200mm touring cars were officially part of the action. More than a dozen countries were represented, but it was Team Associated's Mark Pavidis who took the touring-car win for the USA. Mark's teammate Barry Baker was the top qualifier, but he had car trouble during the Main; better luck next time, dude. Just remember, Barry, "American" ends in "I can" (and, for the record, so does "Mexican" and "Puerto Rican").

Barry Baker

"There's no way I'm going out like this!"
–Billy Easton, when his RC10GT popped a steering linkage in the final seconds of the Off-Road Fuel Nats A-main.

SPEED SHOP

HPI Nitro RS4 3 threaded-aluminum pinions

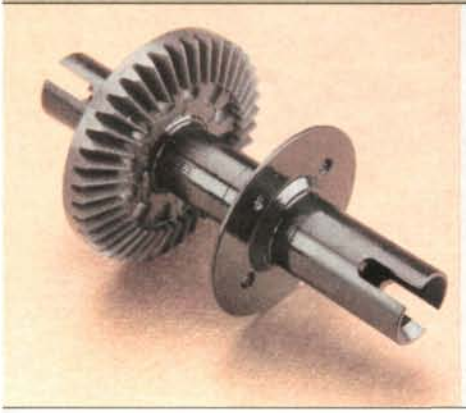
If you added HPI's 2-speed tranny to your Nitro RS4 3 RTR (or if you went for the big dog and bought a Type SS), you'll want to get a set of these precision machined-aluminum pinions. Each is sold separately, so you can go for a close-ratio setup or a big shift into a tall second gear for warp speed—or anything in between. The anodized pinions are available with 17 to 23 teeth in one-tooth increments.

Threaded aluminum pinions for Nitro RS4 3—various item nos.; $5 each.
HPI Racing (949) 753-1099; hpiracing.com.

RPM blue A-arms for Associated RC10GT

RPM's indestructible arms have been favorites of GT fans for years, and now you can get them in blue. The color is molded into the arms, so scratches won't show, and RPM guarantees that the parts are unbreakable. They're a direct fit for the Associated RC10GT (all versions) and can also be used on the original 10T and T2 electric trucks.

RPM Blue GT arms—item no. 70405 (front), 70305 (rear); $10/pair.
RPM RC Products (909) 393-0366; rpmrcproducts.com.



ASSOCIATED Factory Team Nitro TC3 drive-train upgrades

The Associated guys have some trick new parts for the Nitro TC3; Mark Pavidis even used a few to win the IFMAR Nitro Touring Car World Champion title. If you're into the no-diff setup used by 1/8-scale on-road guys, the Factory Team solid rear-diff spool will lock up your TC3's rear end for high-traction action. To reduce rotating mass, try the drilled-out 2-speed housing and one-way hub. The fewer grams you have to spin, the more likely you are to win. What a great rhyme! Why are we wasting time on RC cars when we could be rapping?

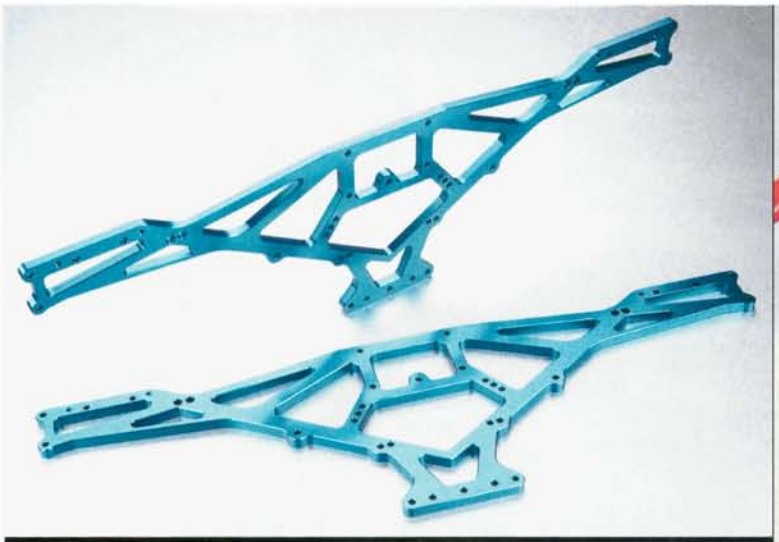
Solid rear diff spool—1704; $30.
Lightweight 2-speed housing—1701; $15.
Lightweight one-way hub—1700; $22.
Team Associated (714) 850-9342; teamassociated.com.

TEAM PRP MegaTune shock towers for Team Losi Triple-XS

There's no denying the cool-factor Team PRP's graphite towers will bring to your Triple-XS, but the parts aren't just pretty; the front and rear towers are full of extra holes to help you find the perfect shock positions and roll-center settings for your track. The PRP towers are cut from high-grade, 3mm carbon fiber for high strength and low weight, and they include all of the necessary mounting hardware.

MegaTune shock towers—XXXSSTF (front), $15; XXXSSTR (rear), $18.
Team PRP; http://home.attbi.com/~teamprp/contact.html.

SPEED SHOP



TAMIYA TXT-1 lightweight chassis

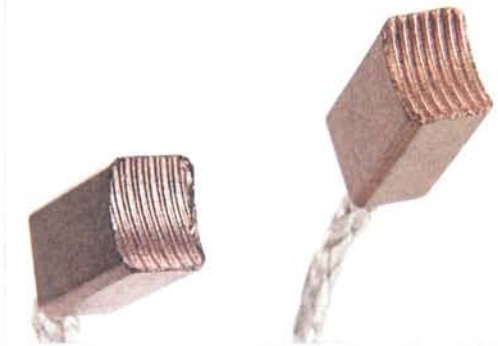
Monster truck stuff in "Racer News"? Hey, it's monster truck *racing* stuff, so there! Tamiya's new chassis plates are reconfigured to use less aluminum than the stockers, with no loss in strength. But let's be honest; you just want 'em because they're blue.

TXT-1 lightweight chassis—53520; $129.99.
Tamiya America Inc. (800) 826-4922; tamiyausa.com.

TEAM MUCH MORE CTX-M Motor Master

Team Much More's highly portable electric motor dyno is the most compact we've seen, and it has plenty of features. The two-line LCD display has an Indiglo-style blue backlight, and the four-button control system makes it easy to operate. The Motor Master reads motor rpm via an optical sensor; to test a motor, alligator-clip it to the power leads, slip the optical "sender" onto the motor's output shaft, insert the shaft into the Motor Master and hit "enter." After the run, the motor's amp draw, peak rpm and duration of the test run are displayed. You can even store the data from multiple tests.

CTX-M Motor Master—MM0001; $160.
Team Much More; distributed by Schumacher USA (813) 889-9691; racing-cars.com.



TRINITY CrossCut stock motor brushes

Trinity's CrossCut concept is pretty clever. The new design is serrated, which in itself is nothing new, but the serrations cut diagonally across the face of the brush instead of running perpendicular to the centerline. According to Trinity, the diagonal serrations present more surface area to the comm, thereby improving conductivity and reducing wear, and they have a self-cleaning effect that also helps extend time between rebuilds. The new brushes are available with and without terminals, in two compounds; the "99" version uses more silver and is softer.

CrossCut—RC4504 (with terminal), RC4504NT (without terminal); $4.
CrossCut 99—RC4505 (with terminal), RC4505NT (without terminal); $4.
Trinity Products Inc. (732) 635-1600; teamtrinity.com.

LAST LAP

If you could race only one class of RC for the rest of your life, which one would you choose, and why?

Off-road—no hesitation. Nothing beats dirt and jumps; I don't care how fast your touring car goes. And when I say dirt, I mean dirt—not brown pavement.
Mike Gill

Is "nitro" a class? Because I pick nitro anything. I like electrics, but the noise and smoke of nitro cars really does it for me. If I had to narrow it down, I would choose 1/8-scale buggies. I only have a truck now, but I've seen the buggy guys run, and that's the poop.
Roger Manton

I bet I'm the only guy who says "1/12 scale." If I'm gonna race it forever, I'm gonna work on it forever, so give me the simple car! And besides, I just like the little cars. They're insanely quick, and you don't usually have to race hacks in 1/12; it's a smooth drivers' class.
Les Gray

I would definitely race 4WD electric buggies. I'm not a nitro guy, I love off-road, and nothing is more fun in the dirt than a 4-wheel. I'll take a fully pimped-out Triple-X4 and race it forever. When is it coming out?
Paul Mensley

I thought about this for a while, since I race 1/10 truck (nitro and electric), 1/8-scale buggy and touring cars in the winter. But then I thought, "I need to race 1/5 scale!" If I had to race one class forever, I would get a totally tricked out FG with a big go-kart-lookin' pipe and disc brakes and all the other stuff. That's all me.
Antonio Benedetti

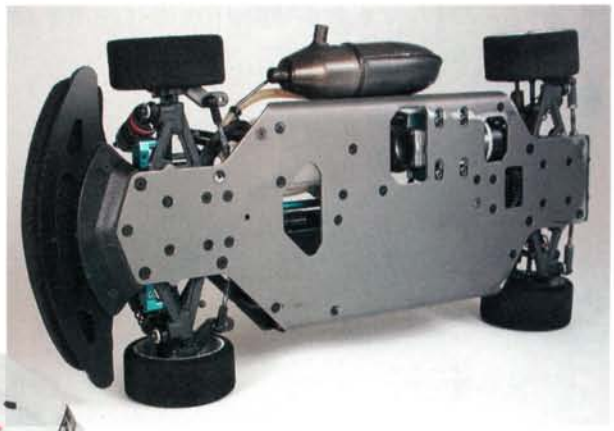
NEXT MONTH'S QUESTION

If you had an unlimited budget, a machine shop and a team of engineers working for you, what type of racecar would you design?

Respond by clicking "Last Lap" at **rccaraction.com.**

UNDER THE HOOD

Mark Pavidis' Team Associated Nitro TC3



Mark used the optional Factory Team hard chassis, which is even more rigid than the stock plate chassis. The natural, hard-anodized finish looks cool and is extremely smooth.

RACE GEAR

Transmitter M8
Receiver Airtronics
Steering servo Airtronics 94757
Throttle servo Airtronics 94737
Battery 5-cell NiMH
Engine O'Donnell/RB
Clutch 2-shoe
Clutch bell/spur gear 21T/54T (1st), 27T/48T (2nd)
Pipe Associated 2-chamber
Tires Jaco foam 40S
Body Protoform 200mm Stratus

SETUP	Front	Rear
Caster	9 degrees	–
Camber	3 degrees negative	3 degrees negative
Toe-in	0	3.5 degrees
Ride height	5mm	5mm
Droop	4mm	4mm
Swaybar	1717 blade set at 45 degrees	3960 kit
Ackerman	Standard 3857 ball ends	–
Shock oil	60WT	40WT
Shock piston	No. 3	No. 3
Shock spring	Red	Copper
Shock tower mounting hole	Outer*	Middle
Camber link mounting hole	Inner	Inner
Arm mount hole	Outer	Outer
Track width	Standard	Standard
One-way	Yes	–

*Mark installed the shocks using the outermost holes on the front shock tower; these are normally used to mount body posts on the tower.

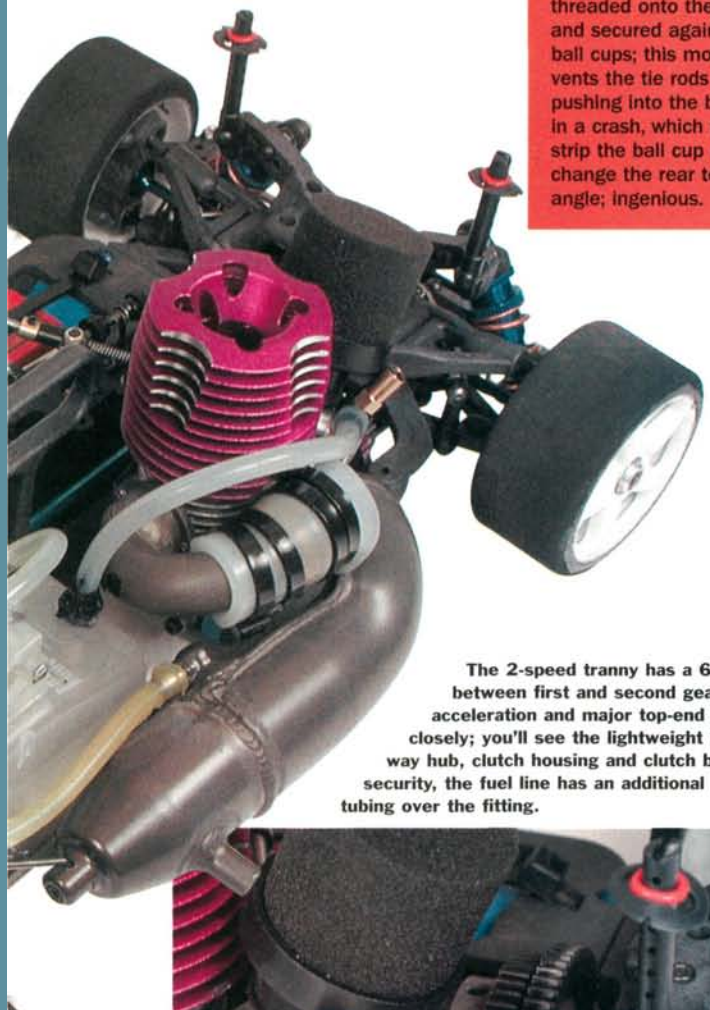
FACTORY OPTIONS

- Natural-finish, dual-chamber tuned pipe and rear-exhaust manifold
- Front blade swaybar with aluminum mounts
- TC3 rear swaybar
- Front one-way assembly
- Full graphite plastic parts kit
- Blue-anodized drive shaft
- Hard chassis
- Lightweight 2-speed one-way hub, clutch housing and clutch bell
- Red 22-lb. springs
- Blue-anodized engine mounts

Mark used Associated's new dual-chamber pipe and didn't take any chances on manifold slippage; note the four zip-ties.

FACTORY DRIVER HOT MOD

Mark drilled small holes on the top of each rear ball cup and then threaded tiny button-head screws into the holes. The screws don't actually make contact with the ball studs, but they do make the ball cups fit more tightly over the ball studs, and this prevents the ball cups from popping off in a collision. Notice the nuts threaded onto the tie rods and secured against the ball cups; this mod prevents the tie rods from pushing into the ball cups in a crash, which would strip the ball cup and change the rear toe-in angle; ingenious.



The 2-speed tranny has a 6-tooth jump between first and second gears for quick acceleration and major top-end speed. Look closely; you'll see the lightweight 2-speed one-way hub, clutch housing and clutch bell. For extra security, the fuel line has an additional band of fuel tubing over the fitting.

SOURCE GUIDE

AIRTRONICS (714) 978-1895; airtronics.net.

JACO (540) 298-7706; jacoracing.com.

PROTOFORM INC. distributed by Pro-Line (909) 849-9781; pro-lineracing.com.

TEAM ASSOCIATED (714) 850-9342; teamassociated.com.

5 QUESTIONS

DRIVER: Mark Pavidis
AGE: 30
LAST BIG WIN: IFMAR 1/10-Scale 200mm World Cup
SPONSORS: Associated, Reedy, Pro-Line, LRP, Airtronics, O'Donnell, Jaco, MIP, Hudy, Kimbrough and Kyosho
WHEN I'M NOT RACING, I: can usually be found working at Pro-Line. I like to spend any free time with my family and friends.

RC CAR ACTION: This was the first time IFMAR offered a World Cup class for 1/10-scale nitro sedans. What did you think?
MARK PAVIDIS: The 200mm nitro sedan class was by far the most competitive racing class at the Worlds. Racing teams attended from Associated, Yokomo, Serpent, Trinity and Mugen, and they all wanted to walk away with the championship.

RCCA: How would you rate the track? Who were your toughest competitors?
MP: The competition was just as tough as any other IFMAR World Championship event. The track was the best one I've raced on here in the U.S. The organizers did a great job, considering that this was the first-ever World Cup race for 1/10-scale 4WD touring cars. My toughest competition actually came from my own teammates. Barry Baker and Billy Easton were both in the zone, but Serpent's Michael Salven and Ralph Burch and Team Trinity driver Josh Cyrul were also very tough.

RCCA: You've been working for Pro-Line for a few years now; how's it going?
MP: Things at Pro-Line couldn't be any better. Some of my daily responsibilities include assisting in product development with the help of lead engineer Tim Clark.

RCCA: You race in a variety of on- and off-road racing classes; which do you enjoy the most, and why?
MP: I really can't choose just one class because I enjoy racing just about any type of RC vehicle. The ones that come to mind, however, are nitro off-road and on-road as well as electric touring and 2WD.

RCCA: We know you're a talented racer; do you excel at any other sports or activities?
MP: No, not really. Dividing my time among family, work and racing takes all of my energy; it would be difficult to find time to excel at anything else.

FOURTH ANNUAL HPI Challenge

SPONSORED BY:
HPI, T-Mobile, Yokohama Tires and Hobby People

by Stefano Angelese

Now in its fourth year, the HPI Challenge provides HPI enthusiasts with a unique racing series that consists of competitions held around the country in RC hotspots as varied as Connecticut, Florida, New Jersey, Seattle/Tacoma and New York. The final race of the 2002 series was held in Southern California, home to some of the fastest HPI racers in the country.

LOCATION, LOCATION, LOCATION

Southern Orange County's Rancho Santa Margarita is a quiet suburb of soccer moms, Spanish-style homes and high-school kids who like to impersonate Blink 182 and Britney Spears. During a particular fall weekend, however, it was home to nearly 100 HPI racers who competed in more than 10 racing classes! Judging by the spectators who crowded the track during the weekend, the event introduced the sport to hundreds of potential racers.

Constructed on Friday, the track was ready to go by the time racers showed up on Saturday morning. Threatening skies didn't deter the competition, and racers were soon tearing it up on the modular track. Erik Larsen of Hobby People set up the racing computer, and shortly thereafter, racers picked up their free HPI Challenge caps.

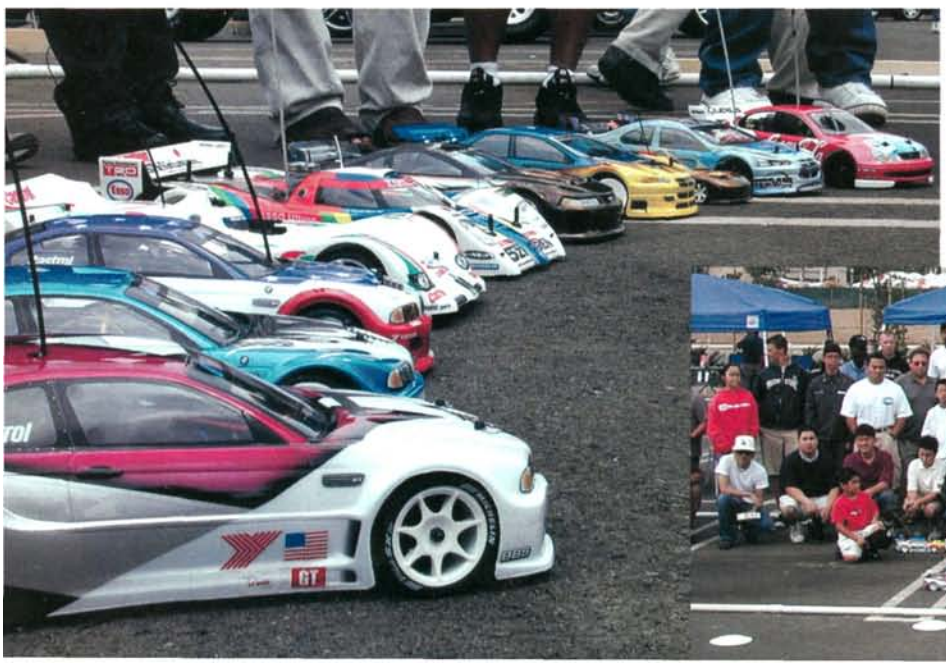
BRING ON THE SWAG

Race sponsor T-Mobile Communications set up its booth next to the track, but racers were well aware that prizes had also been donated by Yokohama Tires—a longtime supporter of the HPI Challenge races. The presence of these big-name sponsors was greatly appreciated by all the racers; more swag is always a good thing!

CHOOSE YOUR RACING CLASS

Racing began after local hero Nestor Rinonos won the HPI Concours Challenge. The qualifiers started with Micro RS4 cars running on a shortened version of the track, and then the jumps were positioned on the track for the Rally and HPI Truck classes. The Touring classes were next; they began with two electric RS4 classes, followed by Nitro Stock, Nitro Modified and Super Nitro Modified. Conforming to the rules created just for the HPI Challenge series, every car was checked before it hit the track to ensure that all drivers followed the rules.

Sunday's racing was quite dramatic, especially the 10-minute Nitro races and Orlando Sherman's thrilling win in the Electric Pro class. The triple A-main of the "Micro Pro Invitational" class was a whole lot of fun to watch; the class consisted of



Far left: wooden ramps were set up around the track so the rally cars and trucks could take full advantage of their long travel suspensions. Spectators occasionally had to dodge flying cars—just like in full-scale rally racing. **Right:** the track crew set up a challenging road-course at a busy Rancho Santa Margarita strip mall, drawing the attention of hundreds of shoppers and even causing a couple of traffic jams. **Below:** HPI Concours Challenge champs, left to right: Charley Barnes (runner-up), Nestor Rinonos (winner) and Daniel Mark (runner-up).

local sponsored racers and HPI employees, all of them racing 1/18-scale Micro RS4 cars. HPI factory driver Thad Garner took all three wins after a squeaker of a battle between Orlando and HPI Nitro 3 designer Erik Shauver, who ended up second and third, respectively.

WRAP-UP

What makes the HPI Challenge different from other races? Racers are encouraged to have fun and break into smiles during racing; encouraged by things such as a racers' dinner on Saturday night, Blindfold and Top Speed Challenge events and fun classes such as Truck, Rally and Micro Racing. Furthermore, during the two days of racing, every participant was given a custom HPI Challenge hat, a free HPI body, tons of decals and the chance to win HPI kits, trophies and plaques. To top it off, some classes even had the chance to win a plane ticket to Japan to race in the HPI Challenge World Finals! Want to know more? Head over to hpiracing.com, and check out the HPI Challenge section for more details about the series! ■

WINNERS

MICRO STOCK
Irwin Lau
Bill Meyn
Danny Oliveres
Justin Kuzmanich
Chuck Oliveres

MICRO MOD
Oliver Alfonso
Wijaya Lim
Roy Imahara
Chanjwon Park
Steve Lai

MICRO PRO INVITATIONAL
Thad Garner
Orlando Sherman
Erik Shauver
Andrew Hillman
Chris Nicastro

ELECTRIC RALLY
Giancarlo Agar
Michael Boule
Kanji Takagi

HPI TRUCK
Chris Arellano
Jason Shirley
Eric Arellano
Mac Macasero
Devin Perez

ELECTRIC STOCK
Nestor Rinonos
Joe Macasero
Howard Hodges
Anthony Tran
Bobby Powell

ELECTRIC PRO
Orlando Sherman
Mark Dawson
Charlie Barnes
Irwin Lau
Greg Bauchat

NITRO STOCK
Alvin Francisco
Chris Agloro
Alexander Imahara
Trevor Dyck
Dennis Chew

NITRO MODIFIED
Dereck Butterfield
Chris Bussert
Freddie Phumirat
Eddie Fulinara
Freddy Lagmas

SUPER NITRO MODIFIED
Dereck Butterfield
Debbie Phumirat
Joedy Flores
Nestor Rinonos
Nam Nguyen

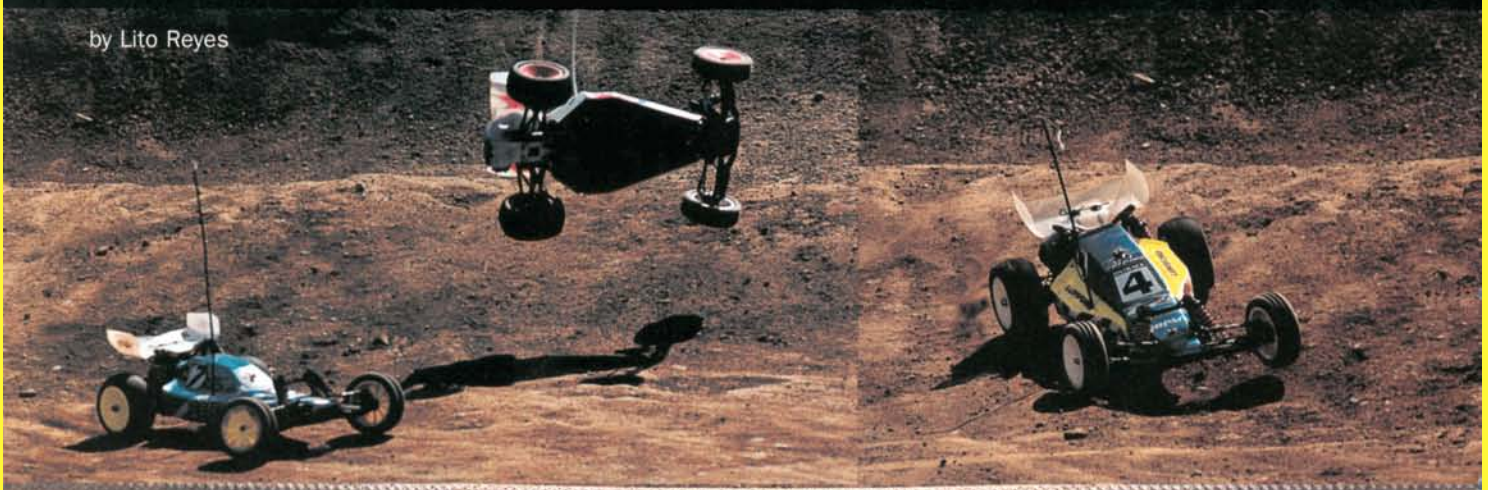
Above left: HPI advertising manager/art director Kent Clausen lets racers get a good look at the new Savage 21 monster truck. **Left:** bring 'em in, fuel 'em up, and send 'em on their way. At least one pit stop was necessary during the Mains.

Team Losi/Team Trinity driver Adam Drake cleaned up in the 2WD and Truck Modified classes; in fact, no other racer even challenged him during the Mains.

THE 10TH ANNUAL PRO-LINE ENDLESS SUM

SPONSORED BY PRO-LINE, RC CAR ACTION, TEAM ASSOCIATED AND REEDY MODIFIEDS

by Lito Reyes



Photos by Lito Reyes

MER CLASSIC

THE ADAM DRAKE SHOW

For the 10th year in a row, Pro-Line held its annual "Say good-bye to summer" race: the optimistically titled Endless Summer Classic. It's a September staple and brings together some of the best electric off-road drivers in the country for one last friendly bash before the leaves start to fall (or, in Southern California, before the Santa Ana winds kick in). Eighty one entrants filled the Sportsman Stock, Expert Stock and Modified Truck and Buggy classes for two full days of fun racing. Despite the hot weather (bottled water regularly sold out, but the hot pizzas were deeply discounted), the event carried a very relaxed, Southern California tone.

QUALIFYING AND A-MAIN ACTION

■ **STOCK TRUCK.** Aaron Waldron proved to be the standout non-factory racer by dominating Stock Truck. He held his TQ spot all the way through the third round, and then he topped his own TQ time in the fourth round by 15 seconds! The early battle for second was between Adam Smith and Travis Lawrence, but in that magic fourth round, Rusty Charpentier leapfrogged Smith to qualify in second, with Austin Bishop earning fourth and Lawrence bumping down to fifth on the grid.

It was no surprise to anyone that Waldron walked away with the big trophy by winning the A1 and A2 races. The battle for second was fought by Charpentier, Lawrence and Smith. Charpentier earned the second spot on the podium by finishing just behind Waldron in A1 and A2 and by winning A3. Lawrence finished third in A1 and claimed the third podium position by winning the A3 run.

Final order: Waldron, Charpentier, Smith

Joey Christianson from The Dirt Track in Hemet, CA, shows off the homemade aluminum dirt shields he installed on his truck's hoops.

■ **2WD STOCK.** Team Associated's Andrew Smolnik earned the nickname "Buggy Master" with his great performance in both Stock and Modified Buggy. In the first round, Smolnik quickly established himself as the man to beat, with Losi's Albert Guardado, Aaron Waldron and Rusty Charpentier all turning 12-lap runs. Things stayed pretty much the same until round four, and then Smolnik had a blistering 13-lap run to seal the TQ. Finishing up the top five were Guardado, Waldron, Charpentier and Austin Bishop.

Smolnik handily took the win in the first Main with Guardado and Smith not too far behind. Then Smolnik sealed the title with his A2 win, while Waldron and ninth-place qualifier, Jared Volz, rounded out the top three. Guardado picked up the win in the third and final Main to take second place overall, but Waldron and Charpentier were not far behind.

Final order: Smolnik, Guardado, Waldron

■ **MODIFIED TRUCK.** Team Losi's nitro truck top gun Adam Drake showed that his truck expertise isn't just in nitro, but in electric, as well. He basically put on a driving clinic for the crowd by dominating the qualifiers (and the Mains, later on). In his first qualifying round, he made a 13-lap run that turned out to be the event's *fastest* run. Until the last qualifying round, Team Losi's Joe Pillars was everyone's target for the second spot on the grid, but then Aaron Waldron (yes, him again) had an excellent 13-lap run (joining Drake and Smolnik as the only 13-lappers of the weekend); he bumped Pillars down to the third spot on the grid. Rounding out the fourth and fifth qualifying spots were Mike Kendall and Wayne Ashmore.

Drake continued to entertain the crowd by winning the A1 and A2 races (both with 13-lap runs) and earning the top podium spot. Much attention was also paid to the battle for the other two podium steps, since they appeared to be wide open. In A1, Pillars finished strongly in second while Waldron landed in third. In the A2 race, Kendall worked his way past the field and bagged second place with Waldron behind him. The A3 race was a hot battle, since second was open to Pillars, Waldron, or Kendall. Waldron's luck ran out when Pillars posted an A3 win to plant himself on Drake's right side on the podium; Glenn Aures came in second and Kendall finished third.

Final order: Drake, Pillars, Kendall

■ **2WD MODIFIED.** He had shown his authority in the Stock Buggy class, and now Andrew Smolnik did it again in qualifying in the 2WD Mod class. But there were lots of challengers for that TQ spot; they were led early on by Wayne Ashmore, Adam Drake and Mike Kendall. By the end of the fourth qualifying round, Smolnik held his TQ position for the grid but was only $^{2}/_{10}$ second faster than Drake, who proved that he is fast in any class. For the Mains, Pillars earned the third spot on the grid, while Ashmore and Kendall rounded out the fourth and fifth spots.

It was the "Adam Drake show" once again.

He summarily won the top spot by winning both the A1 and A2 races. In the A1, Smolnik finished just behind Drake, while Kendall landed in third. Then, in the A2 race, Smolnik had some trouble; he finished third behind Pillars. Pillars had his eyes set on the second spot, but Kendall still hoped to go home with that trophy. Drake sat out the A3 to let Pillars, Kendall and all of the other racers battle it out for second and third. Pillars earned a decisive first-place finish and another trophy to go along with the one he acquired in the Mod Truck class.
Final order: Drake, Pillars, Smolnik

■ **2WD SPORTSMAN STOCK.** During the initial qualifying rounds, Kevin Baker, Frank Chiechi and David Burnell all posted fast 11-lap runs. Going into the fourth round, Daniel Sykes and Andrew Streety joined the 11-lap club, but Burnell one-upped himself with a blazing fast 12-lapper to claim the TQ.

Streety got a jump-start by taking the win in the first Main; Baker and Burnell finished second and third. Then Baker got back into the groove and won the A2 and A3 races to take the whole enchilada. Chiechi, who finished second in A2 and third in A3, earned enough points to take second place.
Final order: Baker, Chiechi, Burnell

■ **SPORTSMAN STOCK TRUCK.** Frank Chiechi, Kevin Smith, David Burnell and Almond McClain posted qualifying rounds that were a mere 2/10 apart. Then, in the last qualifier, Burnell did it again by improving his personal best by 8 seconds to steal the TQ.

Burnell and Smith ended up with equal

THE TRACK

This year, the event was hosted by Pegasus Hobbies in Montclair, CA. The shop has been around for many years, but it recently moved to a gigantic 21,000-square-foot building right next to its original building, and the Pegasus folks built a brand-new, off-road track. The full-service hobby shop is just something you have to see to believe; it's like an RC Disneyland with one of the best selections of RC products that I've seen.

Thanks to great freeway access, the store is also easy to find. It's so accessible from Interstate 10 that you can clearly see the drivers' stand and the full-scale RC10GT (the one busting out of the side of the building, complete with a 10-foot antenna tube). Pegasus Hobbies' owner, Tom Macomber, and his track crew, led by the tireless track manager, Bob Gallagher, worked many nights to design and prep the track, and their efforts certainly showed.

Guest race director Jimmy Babcock (of Team Losi and Hot Rod Hobbies fame) kept the program running smoothly and, like all of the staff at the event, with his professional and upbeat attitude, he helped everyone forget about the heat.

With two days set aside for the Endless Summer Classic, there was enough time for four rounds of qualifying before the Sunday afternoon Mains. The racers seemed to be happy that there were many qualifiers because that meant more track time and more chances to improve their qualifying times. Even the Sportsman racers had a bonus by getting to run triple A-mains to determine their final standings.

FIN.	QUAL.	DRIVER	CHASSIS	MOTOR	BATTERY	ESC	RADIO	TIRES
STOCK TRUCK								
1	1	Aaron Waldron	Team Losi	Trinity	Trinity	Novak	Airtronics	Panther
2	2	Rusty Charpentier	Team Losi	Trinity	Team Orion	Novak	Airtronics	Team Losi
3	5	Travis Lawrence	Team Losi	Team Orion	INS*	INS	INS	Team Losi
4	3	Adam Smith	Team Losi	Team Orion	Team Orion	LRP	Airtronics	Pro-Line
5	6	Mike Baker	Team Losi	Trinity	Trinity	LRP	Airtronics	Team Losi
6	4	Austin Bishop	Team Losi	Banzai	Team Orion	LRP	Airtronics	Team Losi
7	7	Michael Ortega	Associated	Trinity	Sanyo	Novak	Airtronics	Team Losi
2WD MODIFIED								
1	2	Adam Drake	Team Losi	Trinity	Trinity	Novak	Airtronics	Team Losi
2	3	Joe Pillars	Team Losi	Team Orion	Peak	LRP	Airtronics	Team Losi
3	1	Andrew Smolnik	Associated	Reedy	Reedy	LRP	Airtronics	Pro-Line
4	8	Glenn Aures	Associated	Reedy	Reedy	Novak	Airtronics	Pro-Line
5	6	Albert Guardado	Team Losi	Team Orion	Peak	Novak	JR Racing	Team Losi
6	7	Doug Scripture	Team Losi	Team Orion	Team Orion	LRP	Airtronics	Team Losi
7	4	Wayne Ashmore	Team Losi	Peak	Peak	Novak	Airtronics	Team Losi
8	5	Mike Kendall	Team Losi	Peak	Peak	LRP	Airtronics	Team Losi
9	9	Brad Wells	Team Losi	Trinity	Pro-Match	LRP	JR Racing	Team Losi
10	10	Jared Volz	Team Losi	Banzai	Reedy	Novak	Airtronics	Team Losi/Pro-Line
2WD STOCK								
1	1	Andrew Smolnik	Associated	Reedy	Reedy	LRP	Airtronics	Pro-Line
2	2	Albert Guardado	Team Losi	Peak	Team Orion	Novak	JR Racing	Team Losi
3	3	Aaron Waldron	Team Losi	Trinity	Trinity	Novak	Airtronics	Panther
4	6	Adam Smith	Team Losi	Team Orion	Team Orion	LRP	Airtronics	Team Losi
5	4	Rusty Charpentier	Team Losi	Trinity	Team Orion	Novak	Airtronics	Team Losi
6	7	Mike Baker	Team Losi	Trinity	Trinity	LRP	Airtronics	Team Losi
7	9	Jared Volz	Team Losi	Banzai	Reedy	Novak	Airtronics	Team Losi/Pro-Line
8	5	Austin Bishop	Team Losi	Banzai	Team Orion	LRP	Airtronics	Team Losi
9	8	George Ortiz	Associated	Race Prep	Pro-Match	LRP	Futaba	Pro-Line
10	10	David Lechmer	INS	INS	INS	INS	INS	INS
MOD TRUCK								
1	1	Adam Drake	Team Losi	Trinity	Trinity	Novak	Airtronics	Team Losi
2	3	Joe Pillars	Team Losi	Team Orion	Peak	LRP	Airtronics	Team Losi
3	4	Mike Kendall	Team Losi	Peak	Peak	Novak	Airtronics	Team Losi
4	2	Aaron Waldron	Team Losi	Trinity	Trinity	Novak	Airtronics	Panther
5	7	Glenn Aures	Associated	Reedy	Reedy	Novak	Airtronics	Pro-Line
6	6	Doug Scripture	Team Losi	Team Orion	Team Orion	LRP	Airtronics	Team Losi
5	7	Wayne Ashmore	Team Losi	Peak	Peak	Novak	Airtronics	Team Losi
8	8	Joey Christensen	Team Losi	Peak	Peak	Novak	Airtronics	INS
9	10	Travis Lawrence	Team Losi	Team Orion	Trinity	INS	INS	Team Losi
10	9	Derek Buono	Team Losi	Trinity	Trinity	LRP	Airtronics	Team Losi
SPORTSMAN STOCK TRUCK								
1	2	David Burnell	Associated	Handout	Peak	Novak	Airtronics	Handout
2	4	Kevin Smith	Team Losi	Handout	Trinity	LRP	Airtronics	Handout
3	1	Frank Chiechi	Team Losi	Handout	Integy	Novak	Airtronics	Handout
4	5	Scott Chase	Associated	Handout	Integy	Novak	Airtronics	Handout
5	3	Kevin Shrive	Associated	Handout	Integy	Novak	Airtronics	Handout
6	0	Sean Dauster	Associated	Handout	Trinity	Novak	Hitec	Handout
7	8	Marvin Cabrera	Team Losi	Handout	Integy	Novak	JR	Handout
8	7	Almond McClain	Associated	Handout	Trinity	Novak	Futaba	Handout
9	6	Doyle Howell	Team Losi	Handout	Trinity	Novak	Airtronics	Handout
0	9	Adam Rowse	Team Losi	Handout	Xipp	Tekin	Airtronics	Handout
2WD SPORTSMAN STOCK								
1	2	Kevin Baker	Team Losi	Handout	Trinity	Novak	Hitec	Handout
2	4	Frank Chiechi	Team Losi	Handout	Integy	Novak	Airtronics	Handout
3	1	David Burnell	Associated	Handout	Peak	Novak	Airtronics	Handout
4	5	Daniel Sykes	Team Losi	Handout	Trinity	Novak	Airtronics	Handout
5	3	Andrew Streety	Associated	Handout	Trinity	LRP	Airtronics	Handout
6	6	Matthew Pateman	Associated	Handout	Trinity	Novak	Futaba	Handout
7	8	John Brown	Kyosho	Handout	Pro-Match	Novak	Hitec	Handout
8	7	Timothy Lane	Associated	Handout	Team Orion	Tekin	Futaba	Handout

**INS Information not supplied by driver*

points after the first two Mains, but Chiechi wasn't far behind. Burnell spanked his competition in the third Main and easily took the win with a cushy one-lap margin. Smith finished second and Kevin Shrive followed in third.

Final order: Burnell, Smith, Chiechi

WRAP UP

The best word to describe the 10th Annual Pro-Line Endless Summer Classic is "smooth." The contestants had a great time, and the Pegasus Hobbies staff put on an organized and professional event. In fact, the only drama was deciding who would be the trophy girl (track crew member Tracey Macomber earned the honor). We congratulate all of the newly crowned Endless Summer Champions, and we thank Pro-Line and all of the sponsors for their continued support. We overheard many racers already making plans to attend in 2003. Hope to see you there! ■

Post-Run Nitro Maintenance

8 steps to protect your ride

by Peter Vieira

If it took only a few minutes to add a few months—or even years—to the life of your nitro car or truck, you'd do it; right? I see you nodding, but too many of us ignore the very simple post-run maintenance steps that can extend the lives of our nitro-burning machines. It takes less than 10 minutes to properly care for your ride, and it's much easier to do a little maintenance after every run than to have to tear down your entire car and its engine once a year. It's cheaper, too. If you put off all the maintenance until something really goes wrong, it will cost you much more to get your rig running again than you would have spent on air-filter oil and WD-40 if you had maintained your ride the right way!

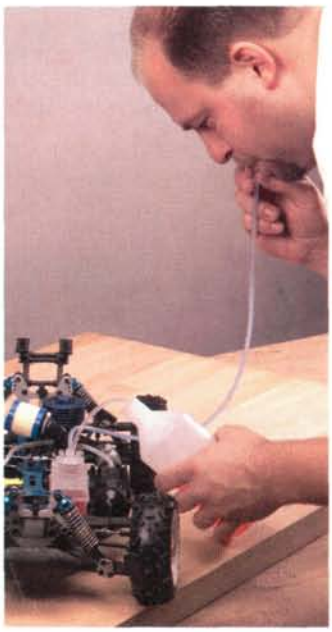
1. Clean it!

Don't put off cleaning! You'll give mud the chance to dry into concrete, and fuel residue gets gummier and more difficult to remove as the days go by until your next run. After you've shaken off the loose dirt, use a spray bottle full of denatured alcohol to blast away the clinging crud. For best results, use a heavy-duty sprayer from the hardware store. If you have access to a compressor, use it to dry the car. Finish the job by spraying the car with WD-40; in addition to displacing water and inhibiting rust, its slippery coating will help prevent dirt from sticking next time. Wipe off any excess WD-40, or blast it away with compressed air.

Denatured alcohol and WD-40 can clean your car and will help prevent dirt from sticking to it the next time you're at the track. An air compressor is the ultimate cleaning tool for RC; a portable unit, like this one, is all you'll need.

PHOTOS BY WALTER SIDAS

Detach the pressure line (A), and plug a length of fresh, clean tubing onto the fitting. Detach the carburetor feed line (B), and route it into your fuel bottle. To drain the tank, blow into the clean tubing that you attached to the pressure fitting.



2. Drain the tank

If you need to call it a day before the fuel tank runs dry, drain it by disconnecting the carburetor end of the fuel line and feeding it into your fuel bottle. Attach a fresh piece of fuel tubing to the pressure fitting on the tank, then blow into it (do not inhale!); any fuel in the tank will be pumped out. It isn't cool to dump the fuel on the ground; you don't want Smokey the Bear on your case.

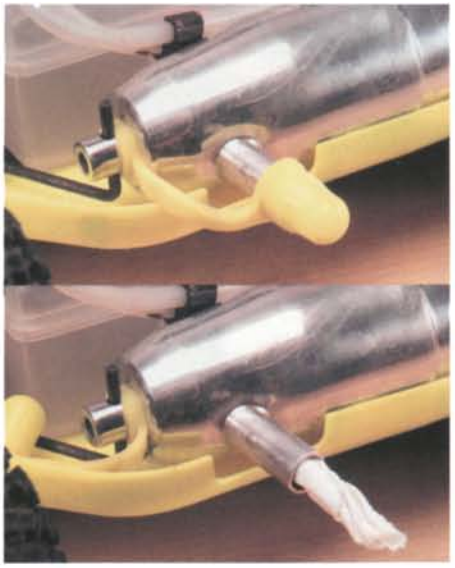
3. Clear the engine

If you ran your engine until the tank was dry and the engine starved out, you can skip this step. Otherwise, you should install your glow-starter and fire up the engine. Don't throttle it; just let it idle until any fuel that remains in the fuel line or carburetor has burned off. It will run for only a few seconds, at most.

4. Lube the piston and sleeve

Remove the glow plug, and drip Hobbico After Run oil into the engine (in a pinch, you can substitute any light oil). Run the piston through the sleeve to circulate the oil by gently turning the flywheel or giving the pull-starter a slow tug.

You don't have to fill the combustion chamber; just put in a few drops of after-run oil and cycle the piston up and down to distribute the lubricant between the cylinder and piston.



5. Plug the pipe

It's normal for an exhaust pipe to leak fuel residue after running, but that doesn't mean you have to let it leak all over the upholstery. Cover the pipe's stinger with a cap (this OFNA buggy comes with one), or plug the stinger with an earplug, a strip of rag, or a wad of paper towel—anything to keep the goo in the pipe and out of your life.

You can use a silicone stinger cap to prevent your pipe from drooling (this one is from OFNA), or you can just jam a hunk of paper towel into the stinger.

6. Clean the air filter and fuel filter

You'll never take the time to do this before you hit the track, so make it part of your post-run routine. Remove the air-filter element, and clean it with a squirt of fuel. Wring it out, and then drop it into a plastic bag with a dollop of air-filter oil. Don't use just any oil; get real air-filter oil. Squish the filter around inside the bag until it's saturated, squeeze out the excess oil and reinstall it. Next, disassemble the fuel filter and remove the screen. Flush it with denatured alcohol, then reinstall it. This is also a good time to check out the fuel lines for splits and cracks.

Some fuel filters use a small, mesh, disc element (like this one); others use a sleeve element. Either way, it's important to check the filter element often and clean as needed.

Filter oil is sticky stuff; use a plastic bag to saturate the filter without gooing up your fingers.

7. Eyeball it

Now that your car has been cleaned and drained, give it the once-over for loose screws and damage. The engine-mounting screws and wheel nuts should always get a twist before bedtime.

Engine screws are particularly prone to loosening. Even if you installed them with thread-lock, checking the engine screws after each run is a good habit to get into.

8. Park it

Instead of just tossing your car onto a shelf, prop it up on a car stand. You can get a trick rotating job such as this DuraTrax model, or you can go low-buck and just use a hunk of wood; anything that gets the wheels into the air is fine. This will prevent flat spots from forming on your tires, and it will allow the suspension to "relax," which extends the life of the shock springs.

After you've put your car away, don't forget to store your fuel properly. Before you cap the jug, insert the plastic plug that fits into its neck. If you threw it out, cover the mouth of the jug with a piece of plastic wrap, then screw the cap over it. Keep your fuel away from direct sunlight and in a dry place with a stable temperature (that rules out the garage in winter). If you keep your fuel in the basement, put it on a shelf or a bench top; the cold floor isn't good for fuel.

Don't toss the plug that the manufacturer inserted just beneath your fuel bottle's cap; it provides the superior seal required to keep fuel fresh.

DuraTrax's car stand rotates, doubles as a parts tray, and is tall enough to keep any vehicle's wheels off the ground. You can also use a block of wood as a stand. High-tech or no-tech, always use some type of car stand; your tires and springs will thank you.

LONG-TERM STORAGE

If you have to put your gear away for two weeks or more (bummer), you should add a few steps to those described here. Make certain to give the shock shafts, hinge pins and other exposed steel parts a coat of WD-40 to prevent them from rusting. Check the fuel lines for trapped fuel, and remove any that you find so it won't gum up and clog the lines. Likewise, clear the carb of any fuel that could gum up the works. Remove the batteries from the car and transmitter, and your gear is ready for sleepy time.

DURATRAX
distributed by Great Planes Model Distributors (800) 682-8948; duratrax.com.

HOBBICO/GREAT PLANES MODELS DISTRIBUTORS
(800) 682-8948; hobbico.com.

OFNA RACING
(949) 586-2910; ofna.com.

PRODUCT PROBE

Airtronics MX-3 & JR Racing XR3i

by Peter Vieira and George M. Gonzalez

JR Racing XR3i

Airtronics MX-3

Sharp shooters

Everyone wants a top-of-the-line FM radio system, but not all of us can afford one. And truthfully, most drivers (even the pro's) use very few of those high-end systems' more esoteric features. For most racers and performance-oriented drivers, a midlevel FM system is ideal; with a lower price and the critical tuning features required for high-performance driving, the one-step-down systems are a perfect match for the wallet and the racetrack. We examine two of the hottest new pistols in this category: the Airtronics MX-3 and the JR Racing XR3i. Both transmitters rival the most expensive pro radios in features, yet they cost much, much less. See for yourself!

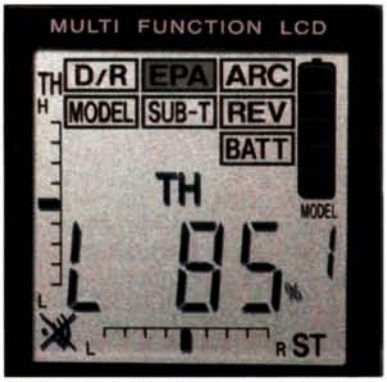
AIRTRONICS MX-3

With a five-year lock on the transmitter category of our annual "Readers' Choice Awards" and a clear dominance the pro racing scene, it's hard to believe that Airtronics has never followed up the wildly successful M8 with a lower-priced computer radio. Well, the wait is over! The MX-3 is here, and it's loaded; all the important features you could ever need for competition are in place, and all are easily adjusted by means of an LCD screen that uses the same no-brainer navigation as the M8 does. But here's the really good news: the MX-3 is also the least expensive FM system with an LCD display on the market!

INCLUDED ACCESSORIES

The MX-3 is available in 27 or 75mHZ and with a variety of servo combinations that range from basic (a pair of 94102 "standard" servos) to race-ready (high-speed, high-torque servo combos); all MX-3s include a switch harness, spare servo horns and grommets, a 4-cell battery holder, instructions and a frequency flag (Yes!).

The Airtronics MX-3 includes the same compact mini-receiver as the top-of-the-line M8; the company offers the MX-3 with a variety of servo options.



The names of the MX-3's adjustable functions are clearly printed on its screen. To show which is active, the LCD darkens behind its name; you always know what you're adjusting and how to "get to" the function you need. Here, the throttle endpoints are being adjusted.

TESTING

The MX-3 test began as soon as I plucked the transmitter out of its Styrofoam shell and gave it a quick "How's it feel?" appraisal. The wheel and transmitter both operate smoothly and feel solidly connected, and the case is well-balanced thanks to the placement of the batteries in its "foot." The shallow thumb rest molded into the grip is comfortable and unobtrusive, and the wheel and trigger are positioned comfortably relative to the grip. I found the dual-rate lever counterintuitive; I instinctively pushed it to the right to increase the dual-rate setting, but this actually reduced dual rate. Also, some drivers may wish the dual-rate switch was on the grip, where it could be adjusted with a thumb while driving, but since I don't tweak the radio once the race is on, I don't mind the switch's top-mounted location.

For practical testing, I installed the MX-3 in a Traxxas T-Maxx, and I didn't have any trouble zipping through the radio's menu of adjustments as I dialed in the brake and throttle throws and fine-tuned the steering. I also used the third-channel endpoint settings to adjust the reverse-mechanism's servo to obtain the correct amount of travel.

After I had run a few tanks through the T-Maxx, I forgot all about the MX-3, and that's exactly what I had hoped for. A good radio lets you concentrate on driving and doesn't distract you with an uncomfortable grip, an unbalanced feel, weird ergonomics, or—worst of all—glitches and "hits." None of that from the MX-3! I only had to think about it when I needed to shift the T-Maxx into reverse; instead of flipping a thumb switch (as you do on the Traxxas TQ3 radio), you have to flip the third-channel switch with your finger. It quickly became second nature for me to hit the switch with my right middle finger without taking my hand off the wheel.

THE VERDICT

Great radio. For an incredibly low price (about $120 with two "standard" servos), the MX-3 has the most used functions of Airtronics' M8, plus the same excellent reception and mini-receiver as the flagship transmitter. I looked for a downside that might explain the MX-3's low price, but I just couldn't find one; it's fully adjustable, easy to use, has a nice feel and is totally reliable. How do you top that?

MX-3 HARDWARE FEATURES

FM operation. Frequency modulation (FM) is superior to amplitude modulation (AM) for response, range and glitch-resistance, especially when you're racing and there are lots of signals around.

LCD display. Lots of radios now use LCD screens, but Airtronics' is arguably the best. Along with the usual eight-segment, alphanumeric display, the MX-3's screen uses a flashing cursor to show which function is being adjusted. There are also graphic representations of the throttle- and steering-servo trim positions, and a battery image "empties" as the MX-3's batteries are depleted (the actual voltage is also shown when "BATT" is selected).

Digital trim switches. Rotary knobs have all but disappeared from computer radios, and the MX-3 follows this trend. The digital switches that have replaced the knobs will not affect the transmitter's settings if they are operated while the unit is switched off. The MX-3 has three trim switches: steering trim, throttle trim and steering dual rate. A fourth switch is configured as a toggle lever that operates the MX-3's third channel.

Adjustable trigger position. The MX-3's trigger throw is fixed at 70-percent throttle and 30-percent brake, but the trigger's position can be adjusted; by turning a screw, you can move the trigger closer to or farther away from the grip. The total adjustment range is 10mm.

Charging jack. A rechargeable pack and charger aren't included, but the jack is ready for you when you upgrade.

MX-3 SOFTWARE FEATURES

Subtrim. The steering and throttle channels can both be fine-trimmed when "SUB-T" is selected on the MX-3's screen.

Model memory. Settings for up to five models can be stored in the MX-3's memory and accessed via the "MODEL" function. Each model is assigned a number; there isn't a naming capability.

ARC. This is the MX-3's exponential function, or "Adjustable Rate Control" in Airtronics' lingo. Expo can be applied to the throttle and steering channels.

Adjustable steering and throttle endpoints (EPA). Selecting "EPA" accesses the endpoints, and "ST," "TH," or "AUX" is displayed to indicate which channel has been selected.

Steering dual rate. The MX-3's dual-rate function can be adjusted in two ways: select "D/R" from the menu and use the increase/decease keys to adjust the setting, or use the dual-rate switch on the top of the transmitter.

Third channel operation. Airtronics had T-Maxx owners and drivers of other 3-channel trucks in mind when it spec'd this feature. The channel is activated by a large lever switch that swings the third-channel servo from one end of its travel range to the other. Exactly what that range will be is determined by you; by selecting "AUX" (for auxiliary) from the endpoint adjustment (EPA) menu, you can independently set the limits of the third-channel servo's left and right throw.

Low-voltage alarm. If the MX-3's batteries dip below 9.1 volts, the radio will beep until you juice them up or install fresh cells.

Sound on/off. The MX-3 peeps when you press its keys or switches. If you prefer the silent treatment, the low-voltage alarm will still be audible though.

The obvious stuff. Naturally, the MX-3 has servo trimming and reversing capability on all three channels. Digital trim switches do the trimming, and selecting "REV" from the on-screen menu lets you reverse the servos.

JR RACING XR3I

The new JR Racing XR3i replaces the XR3 as the company's midline 3-channel FM computer radio system, and it's loaded with hot racing features that are normally found on more expensive, flagship systems. The XR3i bridges the gap between middle-of-the-road and top-of-the-line with features such as adjustable exponential, throttle deadband, channel mixing and a built-in lap counter. That's not all: the XR3i includes two premium race servos and carries a low $169 street price. Let's take a closer look at this affordable and feature-packed radio system.

INCLUDED ACCESSORIES

The XR3i radio system is available in either 27 or 75MHz models. Both include a JR Racing R-135 3-channel FM receiver, one standard Z270 servo and a Z590 high-torque, metal-gear servo with 85 oz.-in. of torque and a 0.15-second transit speed. A 4-cell AA battery holder, a switch harness, spare servo horns and rubber servo-mounting grommets are also included along with detailed instructions.

The XR3i's included R135 receiver is a little chunky by FM radio standards, but it's no larger than other standard receivers. At press time, the XR3i is available only with Z270 Standard Race and Z590 Touring Race servos.

The XR3i's LCD screen displays the functions separately; in this shot, steering endpoint is being set. The "R/B" indicates that right travel has been selected. When throttle is tweaked, "R/B" shows that brake travel is being adjusted. When you adjust left-travel and throttle-travel, "L/T" is shown.

TESTING

I installed the XR3i radio system in my Team Associated Factory Team GT. The relatively large R-135 FM receiver fit snugly inside the RPM receiver box that I had installed on the truck. Setting up the radio system was easy, thanks to the XR3i's straightforward programming. I actually adjusted the steering and throttle-reverse functions, subtrims and endpoints without even opening up the instruction booklet. Of course, I read the instructions later to learn how to exploit the radio's many other features.

The XR3i's unique ergonomics are very well thought out. I was particularly impressed with the lap-counter function; pressing the lap button (grip button "C") with my thumb became a natural response and did not interfere with my driving in any way. The transmitter feels solid and well balanced, and the throttle trigger is wide to accommodate not-so-slender fingers. The narrow handgrip with its molded-in thumb rest provides a natural and comfortable grip. Monster truckers will love the easy-to-access auxiliary third-channel switch, that's just above the thumb rest; it can be programmed to perform various servo-actuated shift functions. The foam-grip steering wheel is positioned in-line with the handgrip to help reduce wrist fatigue during long driving sessions. All the buttons and levers are easy to access and memorize—important for making subtle trim adjustments while you drive—and the large, angled LCD has big, easy-to-read symbols. It takes only a quick glance at the screen to clearly see your lap times when you use the timer function.

The XR3i performed flawlessly during testing, and I never encountered glitches or other interference problems. I didn't exploit the radio's third-channel operation during track testing, but I did set up a third servo on the bench and confirmed that the function works as JR promises. I'll definitely use it in a future project!

THE VERDICT

The XR3i is stylish, has a long list of impressive features and is easy to program. It provides exceptional reception, and the included premium race servos are a definite bonus. JR has put together an affordable and feature-packed 3-channel FM radio system that is a must-see for anyone in the competition radio market.

XR3I HARDWARE FEATURES

FM operation. Frequency modulation (FM) provides cleaner, more reliable reception than Amplitude Modulation (AM) systems. Preferred by racers because FM systems are less prone to glitching in crowded racing environments.

LCD display. The XR3i's two-line display has large, easy-to-read symbols and numbers and that's a welcome feature. The "scroll" button is used to navigate through the function menus, and separate "channel" and "increase" and "decrease" buttons are used to adjust the various parameters.

Digital trim levers. The throttle and steering trim functions are performed electronically by moving the digital trim levers that are above and to the left of the steering wheel. The steering- or throttle-trim value appears on the screen when one of the levers is moved in either direction.

Assignable electronic grip levers. The XR3i has two grip levers (labeled "A" and "B") that can be assigned to perform different functions. Lever "A" is factory programmed to make brake end-point adjustments; lever "B" is factory set to adjust steering dual rate. These are the most useful direct-access functions, so it's doubtful that you'll want to change the grip-lever assignments. But, if you wish, you can assign any of the transmitter's functions to these switches.

Charging jack. This jack at the base of the handgrip will come in handy if you decide to install a rechargeable battery pack.

Adjustable wheel tension. Steering-wheel tension can be adjusted by tightening or loosening the tension-adjustment screw that's under the steering wheel.

Lithium battery backup. The XR3i's internal lithium battery stores your model memory assignments and various adjustments so they won't be lost when you replace the batteries or store the radio for a long time.

XR3I SOFTWARE FEATURES

Model memory. The XR3i can store the settings for up to four models. You can also input a three-character "name" for each model for easy identification. Pressing the "scroll" and "channel" buttons simultaneously when turning the unit on accesses the "Model-Select" function, and pressing the "increase" and"decrease" buttons simultaneously accesses the particular model.

Adjustable frame rate. The XR3i is digital ready with two user-selectable frame rates: "normal" and "fast." Select the normal setting for non-digital (analog) servos and the fast setting when you use at least one digital servo.

Steering and throttle trims. Basic stuff here, but all radio systems must have steering and throttle trims. The XR3i's direct-display digital trim levers make the task easy and accurate.

Steering dual rate. The steering dual-rate function is accessed by moving grip lever "B" in either direction. The moment you move the lever, the value appears on the screen.

Servo-reversing. The servo-reversing function is available on all three channels. Pressing the "scroll" button accesses the servo-reversing function mode. Pressing the "channel" button selects the channel to be changed, and the "increase" and "decrease" buttons are used to change the direction.

Adjustable steering and throttle endpoints (EPA). These are accessed by pressing the scroll button until the EPA menu is displayed on the screen. Pressing the "channel" button selects the

Continued on next page

XR3i SOFTWARE FEATURES

Continued from previous page

channel to be adjusted, and the "increase" and "decrease" buttons are used to adjust the values.

Subtrim. This is accessed by scrolling to the "trim" menu. Pressing the "channel" button selects the channel to be adjusted, and the "increase" and "decrease" buttons adjust the neutral point.

Exponential. Adjustable exponential is new to the XR3i and is featured on both the steering and throttle channels.

Third-channel operation. The XR3i's auxiliary third channel function can be programmed to provide linear servo travel to control a remote fuel-mixture needle valve on a gas boat or large-scale RC car. It can also be programmed to provide full travel (or a preprogrammed amount of travel) in both directions for transmission-shift functions on a nitro-powered monster truck. The third channel is activated by pressing grip button "C," which is conveniently just above the thumb rest. You can also assign grip lever "A" to linear third-channel tasks, such as controlling a remote needle valve, as mentioned earlier.

Throttle deadband adjustment. The XR3i is the first FM computer radio system to have a throttle-deadband-adjustment feature, which adjusts the trigger sensitivity.

Programmable channel mixing. This advanced feature is normally reserved for the most expensive multichannel radio systems; it allows two servos to be controlled by a single input from the wheel or trigger. It's useful for setting up large-scale cars with independent 4-wheel braking or monster trucks with 4-wheel steering.

Lap counter. You can easily and accurately keep track of your lap times with the XR3i's built-in 50-lap counter. Each lap is registered by pressing grip button "C," which is conveniently next to your thumb. A beep sounds each time you press the button to confirm the lap. Lap times are stored and can be viewed afterward by pressing either the "increase" or "decrease" button.

Low-voltage alarm. The XR3i displays the battery voltage on the LCD and an alarm sounds when the voltage becomes too low to provide reliable reception.

GLOSSARY OF TERMS

Deadband. All transmitters are designed to have a small area of trigger travel that will not transmit a "forward" or a "reverse" command; this is done to prevent the trigger from being too touchy. The JR XR3i's deadband is adjustable, so you can set the transmitter for a hair-trigger feel or make it more forgiving if you have a nervous trigger finger.

Dual rate. This function allows the total servo throw to be altered, and it's most often used for the steering channel. Unlike endpoint adjustments, which are made independently for left and right throw, dual-rate adjustments affect servo throw in both directions.

Endpoint. Unlike the dual-rate function, which is used to adjust total servo travel, endpoint adjustments allow you to set left and right servo throw independently. Adjustable endpoints are particularly useful when you adjust a nitro car's throttle/brake servo, where you may need significantly more travel to operate the throttle than you need to operate the brake.

Exponential (expo). This allows you to adjust the servo's response around neutral. For example, if the expo is set for a negative value, the servo will respond less quickly to steering-wheel or trigger movement near neutral and more quickly as the limits of travel are reached. A positive expo setting does the opposite: it's faster near neutral and slower as the servo nears its travel limit. The greater the expo value, the greater the difference in servo speed from slowest to fastest.

Frame rate. Frame rate is the speed at which the transmitter "fires" bundles of information to the receiver. The XR3i allows a faster than usual frame rate to be selected to better exploit the superior processing speed of digital servos.

Mixing. As the word implies, this feature allows you to "mix" the transmitter's channels so that the throttle will also influence steering or vice versa. This function is rarely used with cars, but it is popular with boats, where a little rudder is often mixed with the throttle to prevent the boat from pulling to one side when it accelerates.

Servo-reversing. With the exception of the trigger and wheel, this is the oldest transmitter feature, and it's arguably the most important. Back in the bad old days, if your car went right when you steered left, you were stuck; you either had to rewire the servo or invent a linkage that would allow the servo to operate the steering system correctly. Servo-reversing lets you reverse the servo's operation with the touch of a button.

Subtrim. This is simply a very fine trimming function. If one "click" of trim is too much, the subtrim will allow you to make a more precise, smaller adjustment.

Trim. When you adjust the neutral position of a servo's output arm, you are adjusting its trim, or "trimming" the servo.

FEATURE COMPARISON

	AIRTRONICS MX-3	JR RACING XR3I
Receiver dimensions	21x15x16mm	45x32.5x16mm
Battery meter	Yes	No
Adjustable trigger	Yes	No
Adjustable wheel tension	No	Yes
Low-voltage alarm	Yes	Yes
Steering expo	Yes	Yes
Throttle expo	Yes	Yes
Steering subtrim	Yes	Yes
Throttle subtrim	Yes	Yes
Memory (no. of models)	5	4
Steering EPA	Yes	Yes
Throttle EPA	Yes	Yes
Third channel EPA	Yes	Yes
Steering dual rate	Yes	Yes
Throttle dual rate	No	No
Adjustable throttle deadband	No	Yes
Adjustable frame rate	No	Yes
Mixing	No	Yes
Price	$120*	$180**

*Price varies with dealer. *Includes two 94102 "standard" servos.*
***Includes one Z270 "standard" servo and one Z590 high-torque servo.*

SOURCE GUIDE

AIRTRONICS (714) 978-1895; airtronics.net.

JR RACING distributed by Horizon Hobby Distributors (217) 355-9511; horizonhobby.com.

Build a Kit

Driving is only half the fun! by Chad Geissler

OK; you've spent the last few months mastering the ins and outs of your RTR. You've tuned it and hopped it up, and now you're ready to add another machine to your RC stable. Why not try a kit? You're an accomplished RC guy; you know how to wrench on a car; you're ready. In fact, you're more than ready; for many of us, getting started in RC meant getting a kit and jumping in with no wrenching experience at all! Whether your first kit is also your first RC car, or you bring some RTR experience to the bench, the info and tips noted here will get you stoked to wrench and will help make your first build a great one.

HOW KITS "WORK"

Today's kits are very complete; they include detailed manuals that help make them fairly easy to build. Manuals are divided into sections, and all of the pertinent parts are packaged in corresponding bags. For example, if "Section A" in the manual covers building the differentials, the manual instructs you to open Bag A, which contains everything you'll need to complete those nine steps. The next bag you'll be instructed to open is Bag B, and so on. If you follow the instructions, you'll never have to wade through a huge box of screws and fasteners.

READ THE MANUAL!

The first—and by far the most important—thing to do when you build a kit is to read the instructions carefully before you start building. Familiarize yourself with how the manufacturer communicates the information. Exclamation points, character icons with various expressions (such as smiley faces) and boxed text are commonly used to call your attention to important points that the manufacturer wants you to be especially aware of, such as the proper direction to install a part or how many identical assemblies you must build. For example, the steps that cover shock assembly might say "Assemble four shocks." It's a good idea to use a highlighter to mark any steps you feel deserve extra attention.

TOOLS OF THE TRADE

Make sure that you have the correct tools for the job. Instruction manuals always list the tools and parts included in the kit and the extra tools you'll need to build the kit properly. Kits vary, but there are a few standard items that you can be certain you'll need.

Phillips-head screwdrivers. Get no. 1 and no. 2 screwdrivers; these will cover 99 percent of all the Phillips-head screws used in RC. DuraTrax's screwdrivers are well built and inexpensive, and there's always Sears.

Needle-nose pliers. These are a must-have for snapping ball cups onto ball ends, installing E-clips, holding small parts and performing countless other tasks. You can find them at any hardware store.

Hex drivers. Most kits include "L" wrenches to fit the supplied hex fasteners, but these are unwieldy and aren't built for long wear. A set of RC-specific hex drivers is a very smart investment and makes kit building and maintenance much easier. Losi and Associated kits require .050-, 1/16-, 3/32- and 5/64-inch drivers; Traxxas, Kyosho, HPI, Tamiya and most other kits are metric and use 1.5, 2, 2.5 and 3mm fasteners. RPM's inexpensive tools are excellent, or you can go the deluxe route with tools from Thorp, Hudy, Trinity and others.

Clockwise from left: hobby knife, side cutters, Phillips-head screwdriver, needle-nose pliers, thread-locking fluid and hex drivers.

Thread-locking fluid. Thread-lock (best known by 3M's brand name, Loctite) is a very important—yet often overlooked—toolbox item. It is crucial for a nitro kit and should be used sparingly on any screw or fastener that threads into another metal part. Remember to use the "blue" medium thread-lock, not the heavy-duty "red" stuff.

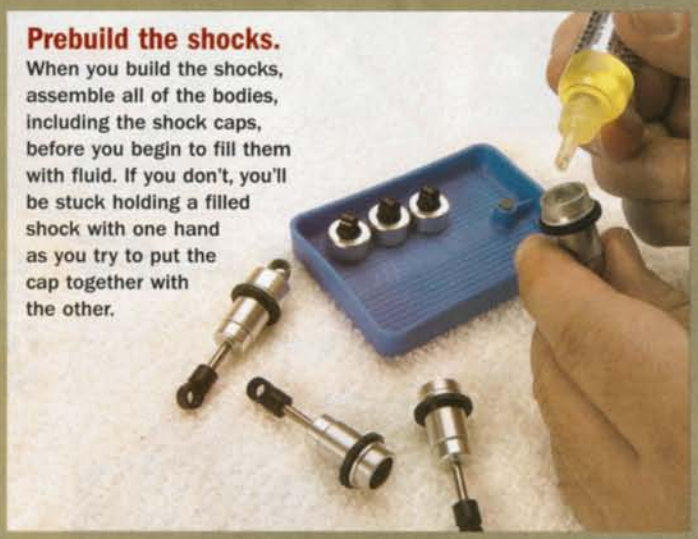
Side cutters. These are also known as flush cutters and are used to snip parts off of parts trees. Good cutters leave no excess material or "waste" on the part after it has been removed. Tamiya makes the best side cutters I've tried; Hobbico and Xuron also make good ones.

BUILDING TIPS FOR ALL KITS

Magnets, baby! They're not just for new-age health cures and erasing hard drives anymore. If you're a butterfingers like me, and you drop a screw on the carpet while you're building, use a magnet to find it quickly. Steal one off the fridge, or if you bought an electric kit, use the motor to do the job; its magnets will grab that screw. Enclose the motor in a plastic bag, so the part you're looking for doesn't get sucked inside.

Go to the light. Always build in a well-lighted area where there's plenty of space to lay out your kit. Use a towel or a piece of low-pile industrial carpeting to cover your work surface; it will help prevent the small parts from rolling onto the floor. I'm convinced that a small kit part that bounces onto the floor can actually break all laws of physics because I can get on my hands and knees with a flashlight, and I'll still find it halfway across the room. I only dropped it 2 feet! How the heck did it end up 20 feet away?

Prebuild the shocks. When you build the shocks, assemble all of the bodies, including the shock caps, before you begin to fill them with fluid. If you don't, you'll be stuck holding a filled shock with one hand as you try to put the cap together with the other.



Grip shock shafts without scoring them. Everyone knows you can wrap a rag around the shock shaft so your pliers won't score it, but the rag also prevents the pliers from gripping well. Here's an easier way: use the pliers' cutting jaws to hold the shock shaft where the threads meet the smooth part of the shaft. If you still have a hard time because of a tightly fitting shock eyelet, hold the eyelet with your pliers and pre-thread it with a screw. It should be much easier to install when it has threads.

Glues clues. When you glue tires to their rims, glue one side of each wheel first, and let it dry completely. Then flip them over and glue the other side. If you don't, you're going to be really shocked when you realize that the glue ran and glued the tire permanently to your mom's good coffee table. Boy, was my "friend's" mom ticked off about that one. Sheesh; it was only three tires.

Remember: the bottom line is to have fun. If you take your time, give the manual a close read, and make sure that you have the correct tools, it should be simple to assemble your first kit. If you get stuck, you can always ask for help; *RC Car Action*, hobby shops, online forums and manufacturers' customer-service departments all have a wealth of expertise to help you. Plus, you'll draw on your own knowledge every time you build another kit. You'll be better able to diagnose your problems at the track, and you'll save yourself a lot of money in repairs. So the next time you're itching to drop some cash on a new car, look seriously at a kit.

SOURCE GUIDE

DURATRAX distributed by Great Planes Model Distributors (800) 682-8948; duratrax.com.

HOBBICO/GREAT PLANES MODELS DISTRIBUTORS (800) 682-8948; fax (217) 398-0008; hobbico.com.

HUDY SPECIAL PRODUCTS distributed by Serpent Inc. USA (305) 639-9665; hudy.net.

RPM R/C PRODUCTS (909) 393-0366; rpmrcproducts.com.

TAMIYA AMERICA INC. (800) 826-4922; tamiyausa.com.

THORP BY MIP (626) 339-9007; miponline.com.

TRINITY PRODUCTS INC. (732) 635-1600; teamtrinity.com.

XURON CORP. (207) 283-1401.

Team Orion Core Modified & Core Stock

by Steve Pond

Team Orion's new "Core" line is the company's second generation of motors with all the components built to its own design. Orion takes full advantage of this by incorporating innovations that put its motors on the cutting edge of the technology. The Core Mod and the Core Stock motors have subtle tweaks that enhance their performance and give them a head start in the ongoing horsepower wars. Their refinements are the work of Orion experts Philippe Neidhardt and Oscar Jansen and Team Orion/Peak Racing's Rick Hohwart. Together, they developed motors that are increasingly successful in many forms of racing.

TEAM ORION CORE MODIFIED

Introducing the first generation of "Chrome" Series motors was a significant milestone for Team Orion: the Chrome was the first motor the company designed and built from the ground up. Among its many features, it brought the innovations of surface-mounted capacitors built in to the endbell at the factory, and pattern-wound armatures—the first in production RC motors.

The new Core Modified motor marks the next step in the evolution of the Chrome series. It has been tweaked to further raise the performance bar and optimized to work with state-of-the-art racing batteries.

Hard-Core racing power

TEAM ORION CORE STOCK RS

Like the Core Modified, the new Core Stock RS motor evolved from the Chrome Series. The 27-turn Stock is ROAR-legal and has a fixed 24 degrees of timing. It takes unusual creativity to make advances in stock-class-motor performance because manufacturers must follow the rules. Even though Orion has played by the rules, the Core's performance characteristics are noticeably difference from those of the Chrome it replaces.

INSIDE THE MOTOR

MOTOR CAN. The Core Stock's can is almost identical to the one used for the Core Modified. The only noticeable differences are the notch to fix the endbell's timing at 24 degrees and the marks on the bottom of the can. Common features include side and bottom cooling vents and the new, stronger G12 wet magnets.

ENDBELL. Like the motor can, the Core Stock's endbell is virtually identical to the Core Modified's, but it's molded in gray, and the Mod version's is black, so it's easy to tell them apart; the Core Stock also has laydown brush hoods.

The stock endbell has profiled bushings to increase rpm. Two surface-mounted capacitors are installed at the factory, so you don't have to solder anything unless your speed control requires a third capacitor or a Schottke diode. Polarized heat sinks for the brush shunts are visual aids to determine proper polarity, and polarized brush springs optimize performance.

FEATURES

- Black coating on can maximizes heat dissipation
- Armature is pattern-wound for more precise balance and lower weight
- Armature has wider web for increased torque and overall power output
- Two endbell capacitors are factory installed
- New-generation G12 magnets produce more torque

INSIDE THE MOTOR

MOTOR CAN. The Core Modified can's design is very similar to that used in previous Chrome motors; its coating is the key difference. The Core's new thermally efficient black coating will help to keep its temperature down; this is especially useful when the motor has to work harder. Cooling vents include four in the bottom of the can and a row of slots in the area between the magnets.

ENDBELL. The endbell is a proven design from the Chrome motors, which were the first to bring us factory-installed capacitors. It features aluminum brush-hood heat sinks and long brush damper springs below the brush in the bottom of the hood. Color-coded heat sinks for the brush shunts help to identify which side of the endbell is positive and which is negative, and there are "+" and "-" marks molded into the endbell—just in case you forget which color is positive.

ARMATURE. To increase torque and overall power output, the Core's armature has a wider web (the bottom part of the "T"). Orion still pattern-winds the wire around each armature pole, claiming that it ensures that all the poles have the same length and weight of wire wrapped around them. The primary benefit of this type of winding is that it minimizes the balancing the armature requires when its assembly is complete. The armature is balanced with epoxy, which sticks very well. If an armature needs very little epoxy-balancing, it will weigh less and accelerate more quickly.

BRUSHES. The Core motor has conservative, serrated, modified, Enduro-compound brushes. It's claimed that they offer a more efficient balance of power and durability. Again, to increase performance, you could install competition brushes that have a higher silver content, but you'll then have to cut the commutator (comm) more frequently because brushes that contain more silver wear the comm more quickly.

BRUSH SPRINGS. Springs hold the brushes against the comm. These 135-degree, 11-ounce Orion Pro Brush Springs are easily identified by their silver color.

ARMATURE. The Core Stock has a split-rotor armature that's designed to increase rpm. The armature also has the "Power Tunnels" that we first saw in Reedy's stock motors. These are holes drilled through the laminations to modify the magnetic field in a way that magnetically increases timing for higher rpm. Finally, the armature shaft has the tapered tip that identifies it as being legal for ROAR stock-class racing.

BRUSHES. The Core Stock's serrated Pro Stock Enduro-compound brushes might not give good dyno numbers, but according to Team Orion, they provide the best combination of performance and endurance. The serrated face allows quick break-in, and it reduces the contact surface area to decrease friction and thereby increase performance.

BRUSH SPRINGS. Every Core Stock motor comes with polarized springs: a heavier spring on the positive brush and a lighter spring on the negative. The theory is that the negative brush doesn't need as much spring tension to function properly, so it's given a lighter spring; this is supposed to increase motor rpm without compromising performance.

FEATURES

- Black motor can for improved cooling
- Factory-installed capacitors
- Polarized springs and brush heat sinks
- Two factory-installed capacitors
- "Power Tunnel' split-stack armature for higher rpm

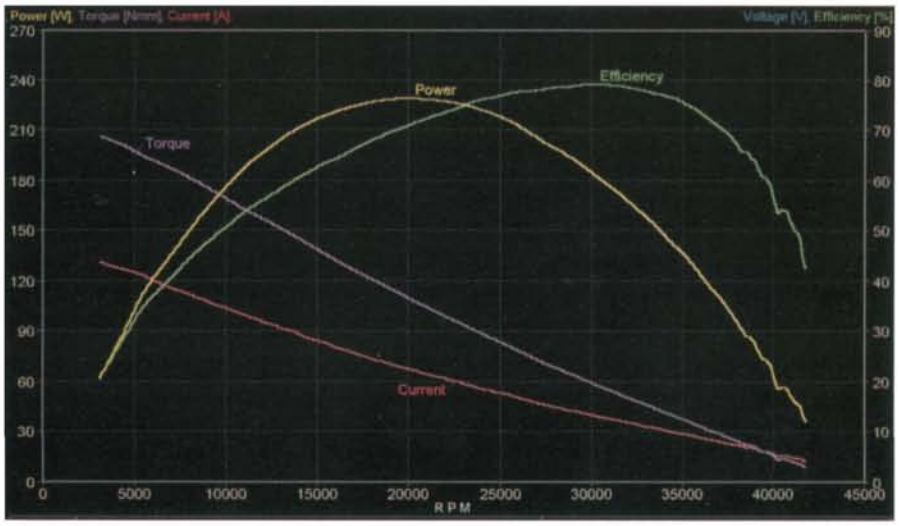
TEAM ORION CORE MODIFIED

TEST-SETUP SPECS

- **WIND:** 10-turn-double, pattern-wound
- **BRUSHES:** serrated modified, Enduro compound (standard)
- **SPRINGS:** silver color, 135-deg., 11-oz. (standard)
- **COMM DIAMETER:** 0.295 in. (7.5mm)
- **TIMING:** 20 deg. (increased from factory setting)

DYNO DATA TEST RESULTS

- **PEAK RPM:** 42,658
- **PEAK POWER (WATTS):** 229
- **PEAK TORQUE (NMM):** 111.9
- **PEAK EFFICIENCY:** 79.2%



DYNO TESTING

I tested a pair of Core Modified 10x2 motors on our Robitronics dyno with the voltage set to simulate a 6-cell battery pack and using the "modified" setting for the "Max rpm" detection. The Core's timing is conservatively set at 16 degrees. In this regard, Team Orion, like other motor manufacturers, plays it a safe to lengthen motor life. According to Team Orion/Peak Racing's Rick Hohwart, the Core Modified's 10x2's timing can safely be bumped up to 24 degrees; this will enhance its performance for racing, but it will require more frequent maintenance. For our tests, I went with a setting of 20 degrees.

The Core put out a peak of 229 watts and respectable torque of 111.9 Newton millimeters (Nmm); most impressive, however, are its rpm figures—up to 42,658rpm. This is almost 3,000rpm more than the previous Chrome motor.

THE VERDICT

The Core Modified is stronger and more refined than its predecessors. It's a new step for the Team Orion/Peak Motors line that brings improved performance—primarily in the form of increased rpm. When all other factors remain unchanged, higher rpm means more horsepower, and that's the new Core Modified motor's greatest attribute.

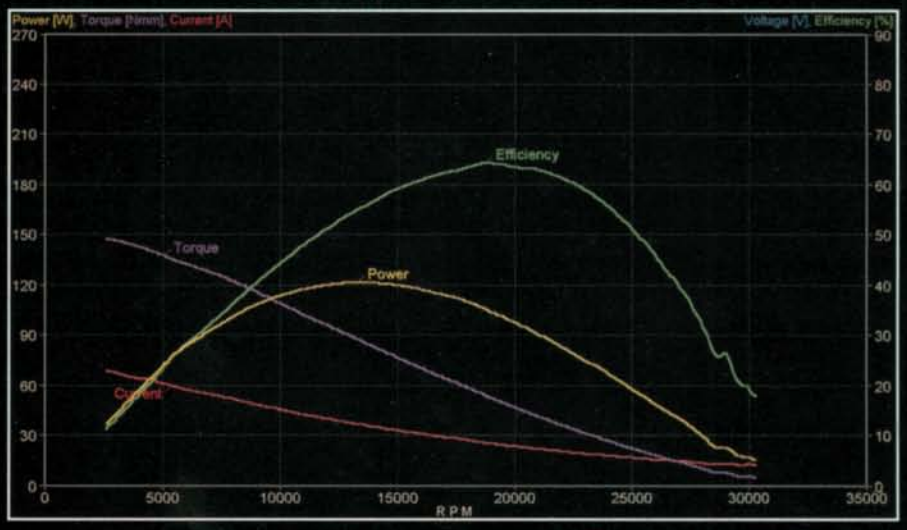
TEAM ORION CORE STOCK RS

TEST SETUP SPECS

- **WIND:** 27 turns of 22-gauge wire
- **BRUSHES:** Pro Stock serrated, Enduro compound
- **SPRINGS:** polarized; red—positive; green—negative
- **COMM DIAMETER:** 0.298 in. (7.57mm)
- **TIMING:** 24 deg. (fixed)

DYNO DATA TEST RESULTS

- **PEAK RPM:** 30,418
- **PEAK POWER (WATTS):** 121.5
- **PEAK TORQUE (NMM):** 87.3
- **PEAK EFFICIENCY:** 64.3%



DYNO TESTING

I tested the Core Stock on the Robitronic dyno set for stock max-rpm detection. In the version of the motor I tested, the Pro Stock serrated, Enduro-compound brushes required a little break-in, so I ran the Core on a 3-cell pack until the brush serrations were worn about halfway down—a point at which serrated brushes seem to perform best.

It's a stock motor, so timing is fixed (no adjustments to make), and polarized brush springs are included. A fresh cut on the comm and some racing brushes will usually help bump up the average stock motor's power, but the Core's comm is cut at the factory after it has been pressed onto the shaft, so it runs true out of the box.

The Core Stock puts out a competitive peak power of 121.5 watts. That's only part of the story, though. The new armature design promotes higher overall rpm and better power output at higher speeds. These performance characteristics may not produce the highest number on a dyno, but the Core's advantages become apparent when you test it in a vehicle on the track. Direct comparisons with motors that produce higher "power" numbers and more bottom end show that the Core does give up a little coming out of tight corners. With 87.3 Nmm of torque at peak power and a max torque of 165.5 Nmm, in less than a second, the Core gathers its revs and will match and then exceed the performance of many motors that produced better numbers on our dyno.

THE VERDICT

The Core Stock's performance story can't be completely appreciated merely with dyno numbers. It's slightly soft coming out of corners, but it soon gains speed and makes enough power to pass vehicles carrying motors that scored a higher power output on our dyno. Use it to compete at the highest levels, especially on faster circuits where you can maintain a higher average speed. A slight gearing adjustment to let the motor rev a little higher would likely benefit the Core, even on shorter tracks.

SOURCE GUIDE

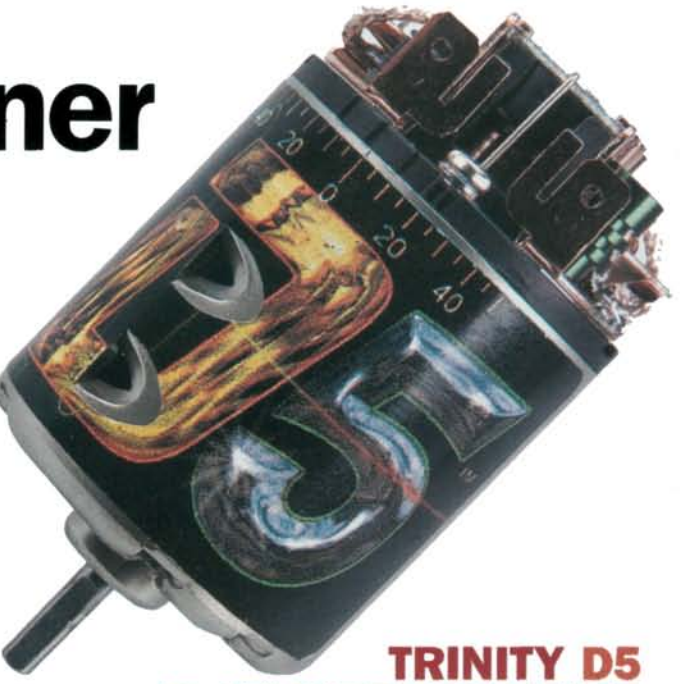
TEAM ORION INC. (714) 694-2812; team-orion.com.
ROBITRONIC robitronic.com.

Trinity D5 Flatliner Modified & Monster Horsepower Stock

by Steve Pond

Trinity can be fairly credited with introducing most of the RC motor-related innovations we've seen during the past decade. It's a leading player in the technology that has brought us nearly 70 percent more power since the early days of RC.

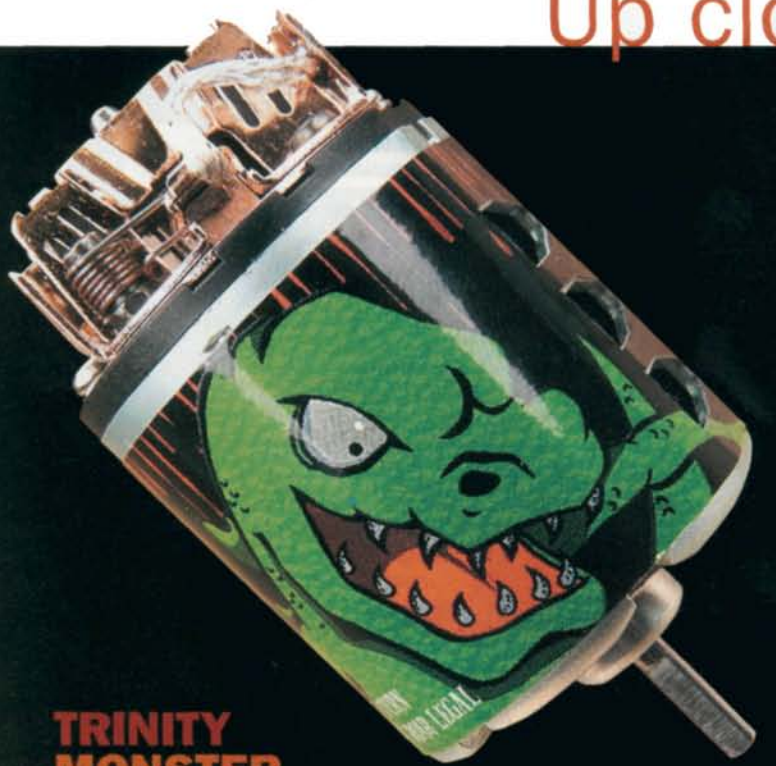
The newest motors from the Trinity camp include many fairly recent innovations plus a host of brand-new ones; Trinity never stops. Its relentless drive to improve and innovate keeps Trinity-powered cars at the front of the pack and makes them the sport's most popular motors in modified and in stock.



TRINITY D5 FLATLINER MODIFIED

Trinity's latest modified motor—the D5—is the fifth in a series of "D" motors that started with Brian Kinwald's nickname of "Dirtinator." The hand-wound D-Series modifieds are now Trinity's premier motors and are raced at the highest levels of competition. Like the first four, the D5 has a few innovations that raise performance yet another notch. Its most prominent feature is that instead of the usual round wire, flat wire is wrapped around the armature (hence its designation as "Flatliner").

Up close with Trinity's



TRINITY MONSTER HORSEPOWER STOCK

Trinity's original "Monster Stock" motor dates back to around 1985 when RC was really becoming very popular. It was built in a Kyosho can and was one of the market's best-selling stock motors. Trinity still makes stockers, but the company now designs its own can designs, and it makes considerably more motors than it did in the '80s. To remember that first Monster Stock, Trinity now introduces a "Revenge of the Monster Horsepower Stock"—a Monster Stock motor that's the fourth in Trinity's stock-class-motor lineup: the P2k, the Green Machine 3, the P2k2 and, now, the Monster Horsepower Stock.

INSIDE THE MOTOR

MOTOR CAN. Ever since the Paradox, Trinity stock motors have had flat-sided cans. The primary benefit of this design is that it's more tamper-proof than any round-can motor. It's simply impossible to advance the timing by moving the endbell. The can also has massive vent holes that are great for cooling, but there's also another benefit: the vents help increase rpm by reducing the strength of the magnetic field; and the asymmetrical vents in the sides of the can manipulate the magnetic field to increase magnetic timing, and that further increases rpm. Tabs at the vents' trailing edges provide a positive stop to index the magnets to the can so there is more consistency from motor to motor (if the magnet is off as little as 1mm, that can change the timing by plus or minus 3 degrees).

FEATURES

- Armature wire is flat
- Magnets indexed perfectly in each can for consistency
- Three capacitors installed on the endbell
- Two armature designs

INSIDE THE MOTOR

MOTOR CAN. Using the knowledge gained in previous designs, Trinity has produced a full can with a minimum number of vent holes in its outer diameter; this is best for a modified motor because it keeps the magnetic field as strong as it can be. The D5 can has a pair of directional vents on both sides, which is in keeping with the aforementioned; they also align the magnets when the motor is assembled at the factory. The magnets are pushed against the blunt edges of the vents to help ensure the magnet positioning is exactly the same in every motor.

BRUSHES. Trinity specs a 4380-epnt double-shunt P-94 brushes for the D5. They have the same dimensions as the P94 brushes, which are supposed to provide the ideal "wrap" around the comm face. The full-face serrated brush is good for high-performance motors, and the compound it's made of strikes a balance between power and maintenance. Trinity offers a racing brush with more silver for better performance, but you'll have to cut the comm more often.

ENDBELL. The D5 endbell is from the P94, and it still has brush hoods for oversize P94-type brushes. New with the D5 endbell is the method of installing the capacitors: they're on a circuit board on the top of the endbell. The previous "D" motors also had three capacitors, but the one that's soldered across the positive and negative terminals was held in place with a spring in those motors. Under the right conditions, it would "chatter" and even cause glitching. The new system is designed to remedy this.

ARMATURE. Two armatures are available for the D5; each suits a particular range of wind configurations. The high-torque P94 armature is specified for motors in the 6- to 8-turn range, and the high-revving D1 armature is used for 9- to 14-turn configurations. Double winds are also available.

BRUSH SPRINGS. Purple springs are installed on both brushes. These are considered heavy springs in the Trinity line, but there is one heavier spring, and many lighter springs can be installed to tune the motor to suit your application.

power pair

FEATURES

- Flat-sided motor can with asymmetrical vents
- Copper brush hoods
- Three factory-installed capacitors
- Polarized brush springs

ENDBELL. The endbell's conductive copper brush hoods and brush-hood heat sinks are easy to spot. Beginning with the P2k, copper replaced anodized-aluminum brush hoods and heat sinks.

The circuit board atop the endbell is new with the Monster Horsepower Stock. The three surface-mounted capacitors eliminate the need to solder any to the motor when it's time to run it. You may only have to install a Schottke diode.

Finally, the copper tabs on the endbell are reinforced to prevent them from bending (copper is soft enough to be bent in a collision).

BRUSH SPRINGS. Trinity stock motors are the only ones to have specific left and right side springs. They're wound in opposite directions and have to be installed on the correct side of the brush hood.

ARMATURE. The split-rotor armature with a step in its crown and a point on the comm end of the shaft is, at a glance, similar to designs used in previous stock motors, but a closer inspection reveals more: the crown's leading edge has a new shape, and the armature's web is thinner and straighter than those in earlier motors. The armature also has fewer laminations. These features all work toward making the motor rev as high as it can go.

BRUSHES. The Monster Stock has Trinity's no. 4499, serrated, laydown brushes. Formerly referred to as "E" brushes, they contain slightly more silver than most standard brushes, so they're a little harder on the comm, but they're popular among racers because they make good power.

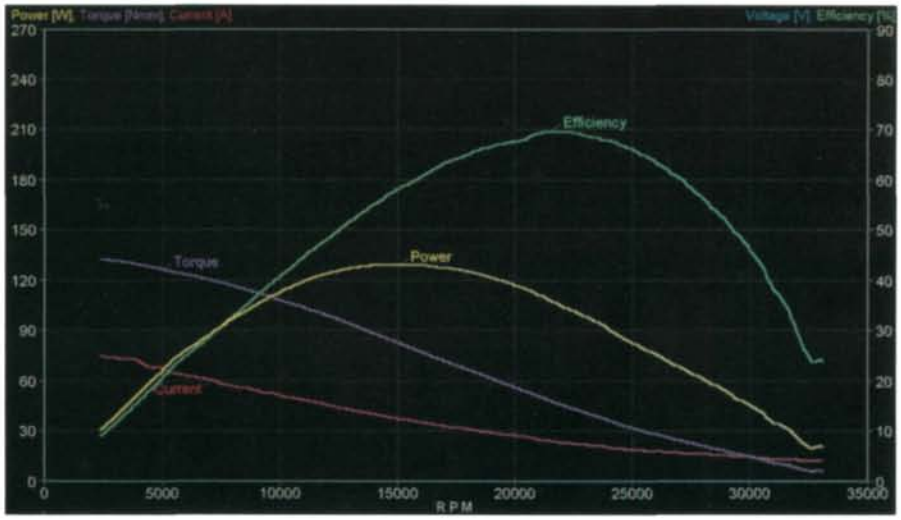
TRINITY D5 FLATLINER

TEST SETUP SPECS

WIND: 10-turn flat-wire single
BRUSHES: Trinity no. 4380 double-shunt P-94 brush (standard)
SPRINGS: purple (standard)
COMM DIAMETER: 0.295 in. (7.5mm)
TIMING: 20 deg. (factory setting)

DYNO DATA TEST RESULTS

PEAK RPM: 47,564
PEAK POWER (WATTS): 255.4
PEAK TORQUE (NMM): 104.3
PEAK EFFICIENCY: 79.9%



DYNO TESTING

We tested a 10-turn single-wind motor that's in the middle of a range that starts at 6 turns and goes up to 14 turns. The D5 motor is wound on the higher-revving D1 armature and not the high-torque P94 armature used in the 6- to 8-turn motors. The 10-turn D5 shows excellent power with a peak of 255.4 watts. Compared with dyno results from similar winds in the D4 and P94 motors, it's slightly softer from a dead-start bottom end, but in all parts of the practical rpm range, it develops more power; it even out-powers a 9-turn D4 and P94! The D4 and P94 show a snappy initial response that carries a vehicle for a couple of feet, but then the D5 pulls past them and holds a significant power advantage throughout the rest of the rpm range. At 104.3 Nmm, peak torque is slightly lower than those of previous motors. The torque numbers are, however, higher in the parts of the rpm range where it counts.

THE VERDICT

The D5 brings enhancements such as a wider power band than previous D motors, and it feels smoother and more linear under braking than they do.

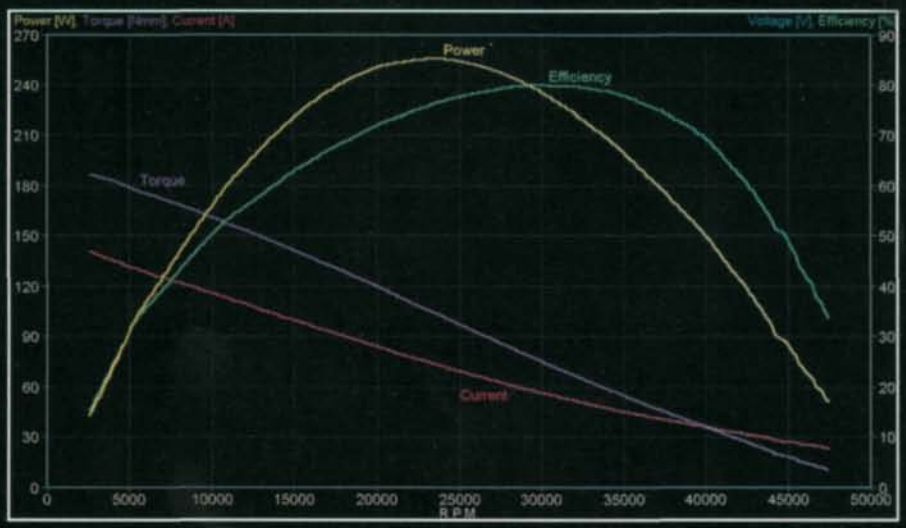
TRINITY MONSTER STOCK

TEST SETUP SPECS

WIND: 27 turns of 22-gauge wire
BRUSHES: Trinity no. 4499 laydown serrated
SPRINGS: polarized; red—positive; green—negative
COMM DIAMETER: 0.295 in. (7.5mm)
TIMING: 24 deg. (fixed)

DYNO DATA TEST RESULTS

PEAK RPM: 33,299
PEAK POWER (WATTS): 129.2
PEAK TORQUE (NMM): 81.7
PEAK EFFICIENCY: 69.7%



DYNO TESTING

The original Trinity P2k developed more power than any stocker, and that includes current stock motors; it pulled 141.9 watts, which still hasn't been equaled. The Monster Horsepower Stock's peak power output is 129.2 watts, and it has 81.7 Nmm of torque. Most impressive is that it pulled an incredible 6,500rpm more than the P2k. Although not nearly as torquey as it, though, the Monster Stock quickly matched the best ever P2k test result and runs away from there. It takes the Monster only about ½ second to get a measure of the P2k, then it quickly jumps to about a 30W power advantage (almost 25 percent more power), and it holds that margin all the way up to max rpm. The P2k is no pooch by any stretch of the imagination, but these two motors are at opposite ends of the power spectrum and have vastly different performance characteristics. The P2k is the king of the holeshot and low-speed corner exits, but the Monster stock rules the rest of the track. It's clear that the Monster Stock will do better with more aggressive gearing (smaller pinion or larger spur) to get it out of the corners more quickly, but it doesn't leave much on the table when it comes to the faster sections of the track.

THE VERDICT

Trinity's goal when designing the Monster Horsepower Stock was to make it the highest-revving motor in its stock lineup. Its new features are geared toward the goal of higher revs, and in that regard, the Monster is king. Increasing punch will require a slightly smaller pinion gear, but all the extra available revs should make up for any speed lost in the gear change.

SOURCE GUIDE

TRINITY PRODUCTS INC. (732) 635-1600; teamtrinity.com.

ROBITRONIC robitronic.com.

Novak GT7 Programmable performance

by Peter Vieira

Unless you've just been defrosted from cryo-sleep, you're no doubt familiar with Novak's Cyclone Series of electronic speed controls (ESCs). The Cyclone (and most recently, the Cyclone C2/TC2) has been our Readers' Choice favorite ESC since it was released in 1997. In addition to a very small footprint, the Cyclone was notable for its small size and groundbreaking programmability. By jacking it into your PC or Novak's hand-held Pit Wizard, you could customize it with your settings for Drive Frequency, Minimum Drive, Drag Brake and a host of other performance parameters.

Similar programmability is featured in Novak's newest pro-racing ESC, the GT7, but now you don't need an external programming device; you just need your index finger and the setup button. The GT7 is 30 percent smaller than the Cyclone, and clever hardware designs include a factory-installed power capacitor, a removable receiver harness and an integrated switch mount.

FEATURES

Installed power capacitor. Unlike the solder-on or plug-in capacitors of the Cyclone series, the GT7's power cap is hard-wired into the case at the factory (removing it will void the warranty). A thoughtfully designed bracket makes it easy to tape the capacitor anywhere, or you can slide the bracket into a slot on the side of the GT7's case.

Variable Throttle Step (VTS) technology. Think of throttle "steps" in this way: if an ESC had just one step, it would work like an on/off switch—no throttle or full throttle and nothing in between. Two steps would give you more control—no throttle, ½ throttle and full throttle. Ten steps would allow more precise control; 100 steps would be even finer, and so on.

Novak's VTS system varies the number of steps (up to 1,300!) according to the frequency of the program you select. Lower-frequency programs have more steps, so you won't have to sacrifice fine throttle control for low-frequency punch. With a high-frequency program, the GT7 uses fewer steps; this prevents the throttle from feeling "mushy" while it preserves the extra-smooth control of a higher-frequency setting.

Adjustable Drive Frequency, Brake Frequency, Minimum Drive, Minimum Brake and Drag Brake. The GT7 is factory-programmed with seven throttle programs (see the "Novak Factory Throttle Settings" chart for the particulars). With the exception of the Minimum Brake setting, the values for programs 1 to 6 can't be changed, but program 7's values for Drive Frequency, Brake Frequency, Minimum Drive, Minimum Brake and Drag Brake can be customized. (See the "Program 7 Throttle Options" chart for the available values and the "Glossary of Terms" for an explanation of those terms.)

The Minimum Brake value of all the GT7's programs can be set to your liking. The Cyclone Series allowed very fine programming of a greater variety of performance parameters, but the GT7 limits adjustability to those that most affect "feel," and there are five values to choose from for each parameter. Those racers who didn't exploit the programmability of the Cyclone (guilty as charged) will be much more tempted to give customizing a try, thanks to the GT7's simplified programming system.

Constant Force Braking and Drag Braking options. In addition to the value choices of Brake Frequency and Minimum Brake, the GT7 lets you select Novak's Constant Force Braking or Drag Brake setup (if you aren't familiar with drag braking, see the "Glossary of Terms"). Introduced with the Cyclone C2/TC2, Constant Force Braking was designed to provide linear braking at all speeds by sensing the motor's rpm. Since electric cars use the motor's electromagnetic field for braking, the motor's rpm affects the braking force available: the lower the rpm, the less effective the brakes. To

counteract this phenomenon and to provide consistent brake "feel," the GT7's Constant Force Braking circuitry adjusts the brake signal relative to trigger position and motor rpm.

One-Touch Set-Up and onboard programming. Novak was the first to introduce pushbutton setup, and now all but the most basic ESCs use pushbutton setup. In addition to the usual setup function, the GT7's One Touch button is used to select programs and to dial in the program 7 profile. You don't have to plug the GT7 into a PC or Pit Wizard; all adjustments are made right at the ESC.

Direct-solder wiring tabs. The Cyclone Series' solder posts worked well, but the GT7's solder tabs are much easier to use. The circuit board exits at the rear of its case, and the power wires pass through holes in the board. This design makes it easy to heat the wires from underneath the board for easy removal and replacement.

Slide-mount on/off switch. The Cyclone C2/TC2's integrated on/off button was cool, but depending on the location of the ESC, the button wasn't always easily accessible. The GT7 returns to a conventional, sliding on/off switch, which can be placed anywhere you like (within the reach of its harness, of course). But the best place for the switch is the GT7's case; like the power-capacitor bracket, the switch can be docked into a slot in the case for a secure, tape-free mounting.

Removable input harness. This welcome feature was new with the Cyclone C2/TC2, and it returns with the GT7. The input harness (three wires and a connector for the receiver) can be unplugged for easy bundling or replacement. The included harness is 10 inches long, and Novak offers a 4.5-inch harness as an option.

Transmitter Check mode. The GT7 will program and operate normally with as little as 90us (microseconds) of forward and brake trigger throw, but Novak recommends 500us of forward throw and 90us of brake throw. The Transmitter Check mode makes it easy to set these values on any radio that has adjustable endpoints. After you've selected this mode, the GT7's LED will indicate when the suggested values are reached as you operate the transmitter trigger and set the endpoints.

Polar Drive and Radio Priority Circuitry. Polar Drive reduces heating at partial throttle and increases regenerative braking. This feature allows you to run the GT7 without a clip-on heat sink, but that's a moot point because this ESC doesn't have exposed FET tabs for a heat sink! The Radio Priority Circuitry makes certain the receiver and steering servo have the power they need to keep you in control, even while the pack gives up its last amp.

MANUFACTURER'S SPECIFICATIONS

Case Size	1.37x1.11x0.66 in. (34.5x28.3x16.8mm)
Weight (w/out wires)	0.93 oz. (26.37g)
PWM Frequency	1000 to 23000Hz
Input voltage	4.8 to 7.2 (4 to 6 cells)
Motor limit	None
BEC volts/amps	6/3
Rated drive current	640 amps*
Rated braking current	160 amps*
On resistance @ transistors	0.00058 ohm*
Price (varies with dealer)	$150

*@ 25 degrees Celsius transistor-junction temperature

TESTING

I installed the GT7 in an Associated T3 equipped with a Sanyo 3000HV battery pack and a 12-turn motor, and I was ready for action after only five seconds of dial-in time on the One-Touch Set-Up button. The GT7 defaults to program 1, which is second only to program 7 for smoothness (program 1's frequency is 15000Hz, versus program 7's 23000Hz).

Not surprisingly, the GT7 provided exceptionally fine control, and I was pleased to find it did so with out any of the off-the-line mushiness that can accompany high-frequency operation. The T3 dug in and ripped as hard as I expected it to with 12-turn power, suggesting that Novak's Variable Throttle Step system must have been doing its thing.

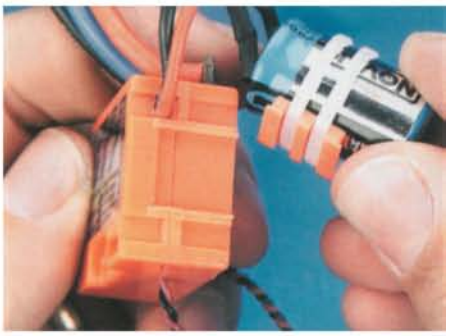
Since the GT7 was able to add punch to a high-frequency program that might have otherwise felt "soft," I was curious to see whether the ESC could also add smoothness to a low-frequency program. I dialed up program 6, which has a drive frequency of 2000Hz. The 12-turn motor felt like it had even more bottom-end pull when I clamped the trigger, while slow roll-ons showed fine throttle control with just the slightest trigger movement and perfect linear acceleration all the way up to full tilt.

Having tested the extremes of the GT7's frequency spectrum, I quickly made a few passes with each of the "in-between" programs. The ESC responded with a progressively more aggressive throttle feel as I moved from the higher-frequency programs to the lower-frequency settings. It's well worth a few minutes during practice to take a lap with each program to see which one feels best.

I also tried my hand at customizing program 7. Getting to it is as easy as selecting any of the other six programs, but inputting the values requires careful attention to the instructions and winking LEDs. I would say "Keep the manual in your pit box," but Novak has gone one better. It has printed the setup, program selection, and program 7 programming instructions on "cheat cards" that you can slip into your transmitter bag's pocket or stick to your toolbox lid; the cards are adhesive backed.

I didn't have any specific programming needs for program 7, but I did confirm that all the adjustments Novak promises are indeed available. Average racers will probably never need a custom program 7 (the six factory-set programs will suit any conditions), but if you have the driving skills to exploit this feature, unlocking its potential will require only your index finger.

You can tape the switch and capacitor anywhere you like, but the hot setup is to simply slide the compoments into the GT7's case—cool.



Ready for action. The GT7 is 30 percent smaller than the Cyclone, so it will fit any vehicle easily.

The stars of the GT7 show are its programmability and neat physical features, but its classic Novak features deserve mention as well. The Radio Priority Circuitry did its usual magic and kept the receiver and steering servo fully powered as the pack flat-lined, and the Polar Drive feature kept the GT7 cool throughout testing. If you're a sensitive driver, you'll notice that the Constant Force Braking really does improve low-speed braking control.

THE VERDICT

The GT7 is another well-designed Novak ESC, and it's a significant improvement on the Cyclone Series in its ease of programming and setup convenience. The slide-mounted on/off switch and power capacitors are genius, and the ESC's six stored programs and customizable seventh program make it easy to find the perfect settings for your needs. My only wish is that the GT7 were less expensive, but I say that about all the pro-caliber ESCs. Look on the bright side: the GT7 is the same price (give or take a few bucks) as the original Cyclone and the C2/TC2 models, so even if GT7 performance doesn't come cheap, at least it isn't getting more expensive!

GLOSSARY OF TERMS

Frequency. To oversimplify, an ESC controls motor speed by cycling the motor on and off many times per second. The number of cycles per second is the frequency in hertz (Hz). It is generally accepted that higher frequencies result in smoother throttle "feel," and lower frequencies have more "punch." Frequency is most often discussed in terms of throttle, but an ESC's brake system also cycles on and off many times each second and has its own frequency. The GT7's drive frequency and brake frequency can be set independently.

Minimum Drive. This is the percentage of full throttle that will be used as the minimum amount of throttle. For example, the Minimum Drive setting for program 1 is 3 percent; that means the least amount of throttle the GT7 will deliver is 3 percent of full throttle.

Minimum Brake. This is the percentage of full brake that will be used as the minimum amount of brake. The default Minimum Brake setting of all the GT7's programs is 20 percent; that means the least amount of brake the GT7 will deliver is 20 percent of maximum brake. Minimum brake can be set for 20, 30, 35, 40, 45, 50, or 55 percent. If you don't select the Constant Force Braking option, the Minimum Brake setting will also be used as the Drag Brake setting.

Deadband. The small amount of trigger travel at neutral that doesn't actually cause the ESC to activate the throttle or brake is called the deadband. The GT7's deadband is set at 5 percent for all seven programs. That means the initial 2.5 percent of the trigger's forward travel and the initial 2.5 percent of its brake travel is deadband (for a total of 5 percent).

Drag Brake. Instead of allowing the car to coast freely when the trigger is at neutral, the Drag Brake setup automatically applies the brake when the throttle is off. The GT7 uses the Minimum Brake setting that's programmed by the user as the drag-brake value. So, if you set the Minimum Brake to 20 percent, the GT7 will automatically apply 20 percent of full brake when the trigger is at neutral.

NOVAK FACTORY THROTTLE SETTINGS

PROGRAM	7	1	2	3	4	5	6
Drive Frequency (kHz)	23	15	11	7.5	4.5	3.5	2
Minimum Drive (percent)	1	3	2	2	4	3	3
Brake Frequency (kHz)	5.5	3.5	4	5.5	5.5	1.5	3
Minimum Brake (percent)	20	20	20	20	20	20	20
Throttle Feel	Smooth						Aggressive

PROGRAM 7 THROTTLE OPTIONS

DRIVE PROFILE	1	2	3	4	5
Drive Frequency (kHz)	1	5.5	12	15	20
Minimum Drive (percent)	3	3	3	3	2
STANDARD BRAKE PROFILE	**1**	**2**	**3**	**4**	**5**
Brake Frequency (kHz)	2.5	3.5	5.5	8	11
DRAG BRAKE PROFILE	**1**	**2**	**3**	**4**	**5**
Brake & Drag Brake Frequency (kHz)	2.5	3.5	5.5	8	11

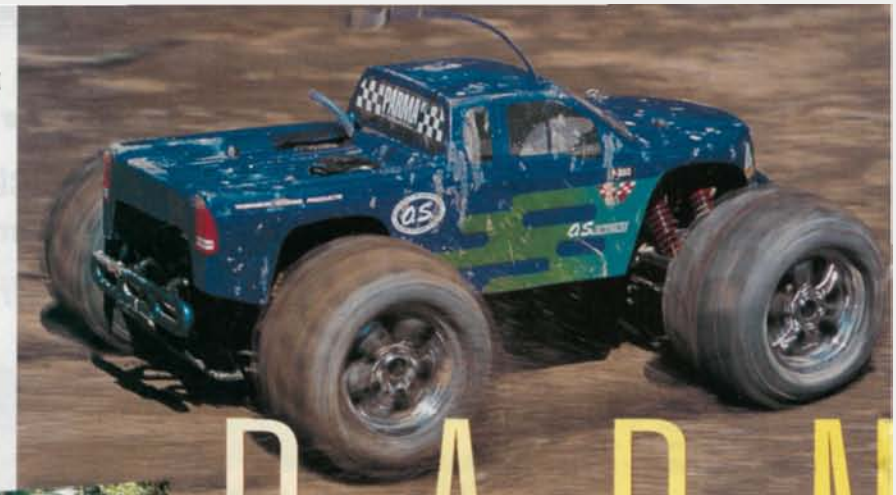
SOURCE GUIDE

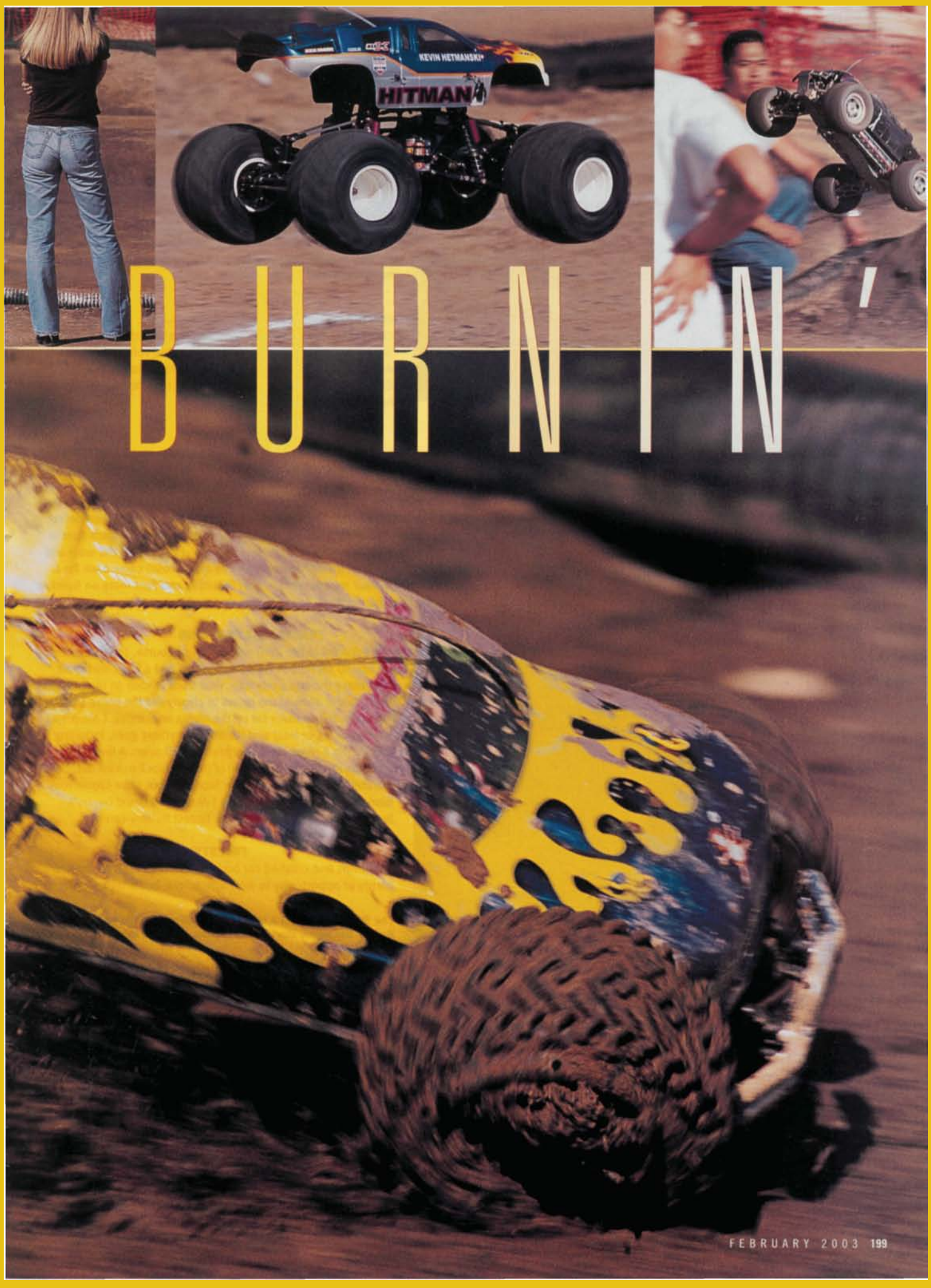
NOVAK ELECTRONICS INC. (949) 833-8873; teamnovak.com.

BY KEVIN HETMANSKI

RCMTRA World Finals

Since 1994, the RC Monster Truck Racing Association has gathered the East Coast's most rabid monster-truck fans for the World Finals (world, East Coast—same thing). This time, the place was Chester, NY, and I crashed the party at Barnstormers R/C to see what was going on, to do a little racing and eat a lot of pizza.





BURNIN'

RESULTS

Here's the track layout; it was divided into three sections.

They may look like the roadies for Lynyrd Skynyrd, but these are actually the World Finals winners.

FIN.	DRIVER	TRUCK
■ CONCOURS		
TRAXXAS T-MAXX		
1	Artie Fie	T-Maxx
2	Bill Manfredi	T-Maxx
3	Anthony Otero	T-Maxx
TRAXXAS E-MAXX		
1	Samantha Olberding	E-Maxx
2	David Gentry	E-Maxx
3	Mike Gentry	E-Maxx
4WD MONSTER TRUCK		
1	Kevin Hetmanski	Tamiya Clod Buster "The Hitman"
2	Rob Allgeyer	Tamiya TXT-1 "Hingeboy"
3	Luis Torres	Tamiya Clod Buster "Spiderman"
■ FREESTYLE		
TRAXXAS T-MAXX		
1	Anthony Otero	T-Maxx
2	Wayne Kloss	T-Maxx
3	Bill Manfredi	T-Maxx
TRAXXAS E-MAXX		
1	Samantha Olberding	E-Maxx
4WD MONSTER TRUCK		
1	Peter Spragg	Tamiya Clod Buster "Liquidator"
2	Andrew Spragg	Tamiya Clod Buster "Green Goblin"
3	Artie Fie	Tamiya Clod Buster "Prowler"
■ RACING		
TRAXXAS T-MAXX MODIFIED		T-Maxx
1	Mike Cronin	T-Maxx
2	Herman Olberding	T-Maxx
3	Artie Fie	T-Maxx
TRAXXAS T-MAXX STOCK		
1	Bill Manfredi	T-Maxx
2	Anthony Otero	T-Maxx
3	Clint Bonnett	T-Maxx
TRAXXAS E-MAXX		
1	David Gentry	E-Maxx
2	Samantha Olberding	E-Maxx
3	Ray Gentry	E-Maxx
4WD MONSTER TRUCK		
1	Artie Fie	Tamiya Clod Buster
2	Kevin Hetmanski	Tamiya Clod Buster
3	Peter Spragg	Tamiya Clod Buster
4	Anthony Luciano	Tamiya Clod Buster
5	Nick Riback	Tamiya Clod Buster
6	Rob Allgeyer	Tamiya TXT-1
7	Hector Aponte	Tamiya Clod Buster
8	Chad Brown	Tamiya Clod Buster
9	Artie Fie	Tamiya Clod Buster
10	Andrew Spragg	Tamiya Clod Buster
11	Anthony Luciano	Tamiya Clod Buster
12	Luis Torres	Tamiya Clod Buster

CONCOURS

RCMTRA president Anthony Luciano randomly picked the Concours judges from the spectators so that the buddy factor would not influence the judging. When the votes were tallied, Artie Fie took first place in theT-Maxx class, Samantha Olberding won E-Maxx, and yours truly took home the hardware in 4WD Monster Truck.

4WD MONSTER TRUCK

This class was open to Tamiya TXT-1s and Clod Busters, and it was run just like a full-scale monster truck race. Two side-by-side courses each featured a long starting straightaway that emptied into a 90-degree turn followed by a small jump and a set of crushed car bodies. Video cameras were used to judge the runs that were too close to call. Bracket-type eliminations determined the winner of each round, and points were awarded for each spot in the brackets. The racer who had the most points at the end of the weekend was the winner. "Fast losers" (determined by a coin toss) came back for a second chance. Four rounds were run on Saturday and four more on Sunday. When the dust had settled, Artie Fie was declared the winner.

TRAXXAS MAXX RACING

The Maxx course, adjacent to the 4WD monster-truck course, consisted of long straightaways, a whoop section, several small jumps and a huge crossover jump. If you didn't make the crossover leap, your truck landed on top of traffic! An elevated drivers' stand allowed the racers to clearly see the entire track. Seven rounds of 3-minute qualifiers set up the Mains on Sunday. T-Maxx was split into Stock (engines .15 or less) and Modified (anything goes, including .21-powered trucks). The E-Maxx class was pretty much open. A few trucks with brushless motors ran faster than some of the big-block trucks! Bill Manfredi was the big winner in Stock T-Maxx, Mike Cronin took home the hardware in Modified T-Maxx, and David Gentry's brushless-motor E-Maxx was the fastest battery-carrier.

FREESTYLE

Big jumps and crushed car bodies gave the Freestyle drivers plenty of opportunity to wow spectators, but after a minute or

The RCMTRA is still a small organization, but it's growing. Before the races started, the trucks were brought out for concours judging.

It isn't just a bed-box; to me, it's a bed. Yours truly caught napping; cold steel just knocks me out every time.

Above: getting air over the crushed cars never got old. The monster truck course was set up to look like a full-size monster truck course. There were crushed cars, poles and jumps all over the place. Above right: E-Maxxes and T-Maxxes rip around the end of the track. The open course allowed some serious speeds.

two, the Freestyle track grew to include the entire Barnstormers outdoor track. As in Concours, spectators judged Freestyle and awarded points from 1 to 10. Each competitor ran for 2 minutes—or until his car flipped over. This was definitely the highlight of the weekend; the crowd roared! Anthony Otero won T-Maxx, and Peter Spragg was the top 4WD Monster Truck driver. E-Maxx winner Samantha Olberding had it easy: she was the only driver in the E-Maxx Freestyle competition! Even with a can't-miss lock on first place, her great showing earned 28 points—the highest score of all the Freestyle classes!

I'LL BE BACK

I had a good time racing at the RCMTRA World Finals, and I think I can speak for the rest of the crowd. I'll definitely be there next year! Want to check it out yourself? Visit http://hometown.aol.com/rcmtra/myhomepage/index.html, or contact RCMTRA at rcmtra@aol.com. ■

TRICK TRUCK STUFF

Remember the Wedico tow truck?

Whenever I cover an event or race at the local track, everyone asks how the tow truck is coming along. Not, "Hey, Kev, how're you doing?" or "Hi, Kevin, it's nice to see you again." No, it's all about the truck. Well, I know I said it would be done very soon; now it's pretty much complete. All that's left is to hook up a few wires and add a few minor details. I can't wait to drive it! This thing is just too cool.

TALK TRUCK!

Send your "4x4" questions and comments to Kevin Hetmanski, kevinh@airage.com.

SOURCE GUIDE

TAMIYA AMERICA INC. (800) 826-4922; tamiyausa.com.

TRAXXAS CORP. (888) 872-9972; traxxas.com.

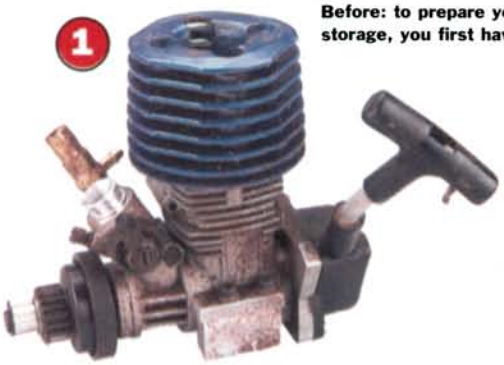
WEDICO distributed by Precision Model Distributors (480) 655-7950; gardentrucking.com.

BY STEPHEN BESS

Winterizing your Nitro Engine

For the millions of us who do not live in a year-round 70-degree paradise such as Southern California and Florida, the onset of winter means a few months of downtime for your nitro engine. Before you break out the indoor electrics and carelessly stow your nitro vehicle in a corner of the workshop, take the time to "winterize" its engine. This will ensure that come next spring, your engine will be just as good and corrosion-free as on the day you packed it away.

PREPARE FOR HIBERNATION



Before: to prepare your engine for a few months or more in storage, you first have to remove it from the chassis.

REMOVE AND CLEAN. When you're preparing to store your 2-stroke engine for the winter, it's the perfect time to inspect its parts for wear. First, take the engine out of your vehicle, plug the carburetor venturi and exhaust outlet with a wad of paper towel, and cover the fuel nipple with an antenna cap. Next, wash the engine thoroughly with a high-quality motor spray or a nitro-engine cleaner. You need to de-gunk the outside so you'll be able to disassemble it without risk of contaminating the internal parts. Use an old toothbrush, if necessary, to scrub stubborn gunk off the engine. Having cleaned the engine, disassemble it and inspect its parts.

Liberally spray the engine with a nitro cleaner to remove built-up track grime and fuel residue. Remove stubborn dirt with a toothbrush.

DISASSEMBLE AND OIL. Disassembling a nitro engine is not difficult; but if you've never done it, check out Kevin Hetmanski's online article "How To Rebuild Your Nitro Engine" at rcnitro.com /rn/articles/ht _rebuild.asp.

To remove the carburetor, unfasten the carb cinch bolt and then pull the carb out of the crankcase, Unfasten the head bolts and remove the cooling head; remove the backplate screws and backplate. You'll now be able to remove the piston sleeve and then the piston/rod assembly. Push the crankshaft out of the crankcase, and you've totally disassembled your engine (crank bearings notwithstanding).

Put all the parts onto a clean paper towel, and check them for wear. Check for crankshaft wear—deep scratches and gouges—and turn the bearings inside the crankcase with your fingertips to check that they turn smoothly. If any components are badly worn or damaged, replace them with new parts.

Liberally spray the disassembled parts with a good nitro cleaner, paying particularly close attention to the crankcase bearings. You must remove all traces of fuel residue. The methanol in the fuel attracts moisture that can cause corrosion if it's left in your engine for the winter. Having cleaned everything with nitro cleaner, spray everything with WD-40. Most cleaners, like the fuel, will leave some moisture behind when they evaporate, so using the WD-40 will ensure that most or all of such moisture is removed.

Disassemble the engine so that you'll be able to clean all of its internal parts properly.

To remove the pull-starter spool safely, slip a screwdriver behind it. Be careful, or your winterizing project could become an exercise in rewinding recoil springs.

Next, coat the crankshaft, the piston/rod and the sleeve liberally with Marvel Mystery Oil (or an after-run oil of your choice), and put several drops of it into both crankcase bearings. Marvel Oil and generic after-run oils are more viscous than WD-40, and they provide the long-lasting rust protection your engine needs. You don't want the engine drowning in

oil, but you do want to thoroughly coat every internal component. The excess oil will be burned off when you run the first tank of fuel in the spring. Don't use a fresh glow plug for that first post-storage run; the excess oil may foul it, so if you have an old one that still works, it's best to use it.

REASSEMBLE. Having cleaned and oiled all of its internal components, reassemble the engine. Push the crankshaft back into the crankcase, insert the piston/rod assembly back into the block (pay close attention to the piston orientation inside the block), and slide the sleeve into the crankcase. Tighten the screws for the backplate and cooling head, insert the carb into the crankcase, and tighten the cinch bolt down. With the engine reassembled, put five drops of oil into the carburetor venturi and glow-plug opening, and to distribute the oil evenly throughout the engine, yank the pull-starter cord a few times, or bump the engine on a starter box for a few seconds, and you've finished!

This shows the fuel left inside the engine after its last run. It looks as if someone plugged the exhaust stinger to shut off the engine, and that forced more fuel into the carb.

Put all the parts on a clean paper towel or rag, and clean each one thoroughly.

After this engine had been stored for two months, there was minor corrosion around the connecting rod. Had it sat for a few months longer, this crankshaft might have had to be replaced.

When you've cleaned the crankshaft bearings thoroughly, inspect them and then oil them liberally. The front bearing can usually be oiled through the seal or shield with a pin oiler such as the one shown here.

ZIP IT! For the ultimate winter protection, wrap your freshly oiled and reassembled engine in a couple of paper towels, place it in a plastic sandwich bag, and seal it. It's now ready for a rest.

If your engine has a pull-starter, properly clean and oil its one-way bearing. Fuel build-up and oil residue are the leading causes of one-way pull-starter bearings' slipping.

Lubricate the piston and sleeve before you reinstall the cylinder head. To clear out excess oil, crank the reassembled engine over a few times. Be sure to store it with the piston at the bottom of its stroke—not stuck in the top of the cylinder.

A properly prepared engine should look as good as new. This engine will come out of storage ready for action without a trace of corrosion or any loss of performance.

Don't want to tear down your engine?

If you aren't confident enough or don't have time to disassemble your engine, you can still protect it from winter corrosion. Remove it from your vehicle and clean it carefully; remove the glow plug from the cooling head and fully open the carburetor. Put 10 to 12 drops of Marvel Mystery Oil into the carb venturi and the glow-plug hole, and crank the engine manually for a few seconds. Then turn the engine upside-down (if it doesn't require the use of a starter box) and crank it again. Flipping the engine over allows excess fuel and oil to drain out of it; cranking it helps to blow the excess oil and fuel out through the glow-plug hole.

A few words of caution: excess oil left inside the engine can cause it to hydra-lock when you reinstall the glow plug; be sure to crank the engine over enough to blow out all the fluids.

NEW FOR NITRO

FIORONI **Carbon Turbo Sliding flywheel and clutch**

Fioroni offers a new Turbo Sliding clutch that has free-floating clutch shoes instead of shoes that are anchored with a pin at one end. Two circular return springs—one installed in a groove in the front face of the clutch shoes and another in the back—reportedly improve consistency because the job of retracting the clutch shoes is done by two springs instead of one. The clutch shoes, return springs and clutch nut are available separately. The clutch shoes are available in three compounds, so you can alter the clutch action to match track conditions.

Horizon Hobby Inc. (800) 338-4639; horizonhobby.com.

TEAM ASSOCIATED **Factory Team Nitro TC3 header and tuned pipe**

Team Associated's recently released Factory Team header and dual-chamber tuned pipe are the same as the ones used by Mark Pavidis to win the recent IFMAR World Cup at the TSRCAR track in Cincinnati, OH. This header/tuned- pipe combination is designed exclusively for rear-exhaust engines and is reported to increase top-end performance compared with the standard rear-exhaust pipe.

Team Associated (714) 850-9342; teamassociated.com.

TECH Q & A

The connecting rod for the O.S. CZ-Z and later CV engines can be installed facing forward or backward, but be careful with piston orientation. Make sure that the piston port is aligned with the tall bypass port in the sleeve and not with the exhaust port.

Q: I recently broke a rod in my O.S. CZ-Z engine. It broke at the bottom (the crankshaft end). Which way do I mount the new rod? It has a lube hole in one side, but which side goes to the front? I have a non-pull-start motor. All I've been able to discover—even from *RC Car Action*—is that I should replace the rod in the same orientation as it was in before I removed it. [email]

Steve M.

A Steve, when you replace any nitro engine part, you must refer to its instruction manual. If you don't have the manual, some general knowledge of engines will help you to determine the correct orientation for any connecting rod when you reassemble an engine. Most connecting rods have an oil hole drilled at a downward angle from one side to the center of the lower rod bushing. Many of the newer engines also have an oil groove in the face of the conrod just above the oil hole. These two features are on the part of the conrod that faces forward toward the crankshaft and carburetor. The air/fuel mixture that enters the engine from the crankshaft's induction port fills the groove and oil hole and lubricates the conrod journal and bushing.

The O.S. CZ-Z engine's conrod design is, however, unique. It has an oil hole in the bottom center, and you can install a new conrod facing in either direction.

A FEW WORDS OF CAUTION: the CZ-Z piston must be installed in the proper orientation or it won't run. A port in the piston skirt must be aligned with a bypass port in the sleeve. The piston can be installed only in one of two ways, so just be sure that the piston port faces away from the exhaust port in the sleeve, and the engine will run fine.

CONTACT THE **PISTON POWER SOURCE**

Send your "Piston Power" questions and comments to Stephen Bess at stephenb@airage.com.

BY BOB HASTINGS

Black-light Beetle

After looking at all of the new stuff for 2003 for last month's issue, I thought I had a pretty good handle on the new year's products and trends. And then the folks at Spaz-Stix unveiled their new line of Ultra Violent paints designed to be used with black-light illumination. Think how vibrant the colors look on those head-trippy posters at Spencer Gifts and on the fake coral reefs in fish tanks; that's a black light in action. To bring this look to RC, Spaz-Stix offers 4- and 8-inch systems to illuminate your car's body from the inside and bring the Ultra Violent paints to glowing life.

Since black lights were something of a craze in the 1970s (sorry, I don't remember; I was trying to master potty training!), and I wanted a suitable retro vehicle for the Ultra Violent paint treatment, what could be better than the HPI Micro VW Beetle RSI?

MAKE IT GLOW!

Unlike conventional paint jobs, the black-light hues are translucent, so any colors you add to them will show through. This means either choosing colors that will take advantage of this quality or having to remask a section between colors; I'll show you how to do both.

Step 1. I started with a "big" VW logo for my Micro body to give it that racing look; then I followed the body lines to accentuate them and give the appearance of speed. The new Beetle's raised hood is an obvious break that's easy to follow; I continued the arc down the sides of the body and to the bottom. When I was satisfied with the design, I masked the stripe with Parma's FasTape.

Step 2. Cover the body outside the logo with tape, and give the logo's open sections a few coats of Spaz-Stix Electric Blue.

Easy Logo X "Marques" the Spot

I wanted a large VW emblem on both sides of the Beetle's body to complement its rounded lines. Instead of resorting to my computer, I thought this would be a good project to show you how easy it is to re-create a simple logo using stuff you probably have in your workshop.

1. I took the no-tech approach and used the spray-paint-can lid as a template to draw the circle that encloses the VW logo; then I cut the mask using a circle cutter. Next came the design's letters. Think of a clock face; tape an "X" with the first piece of tape running from 11 o'clock to 5 o'clock and the second running from 2 to 7 o'clock. The sides of the "W" are parallel to the first strokes. Once you have the lines in place, outline them with a permanent-ink marker, but don't cut them out yet.

2. Use your circle cutter to cut the circle's inner edge. Don't cut through the letters; work slowly and lift the blade so that the letters and the outer ring are in one piece.

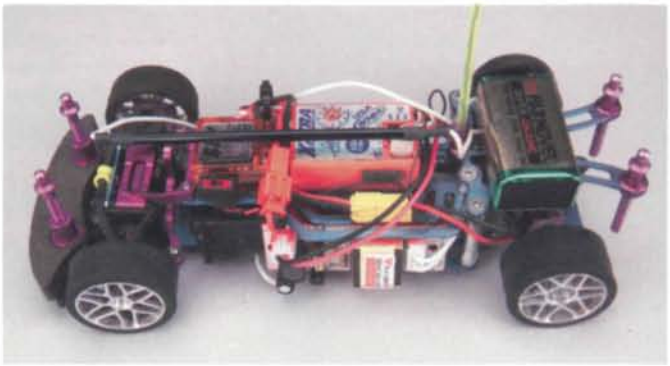
3. Remove the six pieces of waste masking from the logo, and your graphic is ready for application. Position the mask, and cut a small space between the "V" and the "W" to complete your did-it-yourself logo.

Step 3. The main part of the body is "Lemon-Lime"; I started the contrasting stripe with a few coats of Fireball Orange at the trailing edge and around the logo. The orange goes on first because it won't be affected by the main yellow coat. The Ultra Violent paints are very thin, so when you spray them on, do so at low pressure to minimize overspray; I used the 10psi setting throughout this project.

Step 4. Next, I blended Ultra Violent Mango into the previous coats of orange to complete the body's striped section and removed the masking tape.

Step 5. Apply Lemon-Lime to the rest of the body, and give the spoiler a brushed-on coat of FasBlack.

Step 6. After the yellow has dried, coat the letters with Spaz-Stix Liquid Metal. The "chrome" paint simulates the look of the German automaker's emblem. This color scheme really springs to life when you've applied the stock HPI stickers.



Step 7. The Spaz-Stix black-light unit is powered by a 9V battery; the electronics easily fit the Micro RS4 chassis' side and tail sections, and the kit light bulb can be mounted alone or in the included protective shield. The cool-looking chassis and wheels are from Hardcore Racing.

Step 8. One 4-inch black light gives an eerie glow that's unlike anything I've seen!

If you run your vehicle at dusk or under lights, the Ultra Violent paints will really be a cool change. The Spaz-Stix lineup also includes glow-in-the-dark paints and color-changing prismatic hues that are worth looking into. More than anything, your newly painted vehicle will raise a few eyebrows the next time you run with your friends.

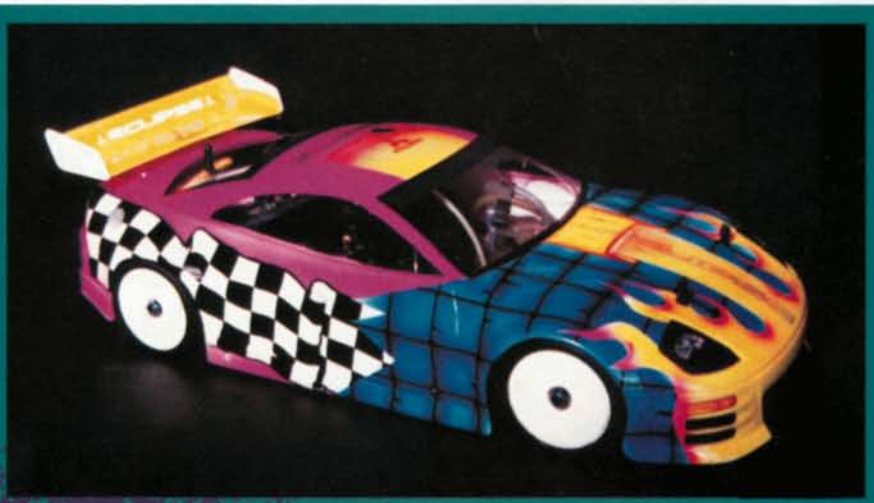
Great paint jobs don't have to be super-complicated—especially if they light up! Remember, you're the only one you have to impress. Go paint something!

New in the shop

SCHUMACHER USA/MDI RACING Headlamp mask

Here's one of the hottest trends on the touring car scene: discard those headlamp stickers and paint the lights instead. If you paint inside the body, the headlights won't be scuffed away, and you'll be free to create your own custom headlight shapes. To make the job even easier, MDI Racing offers a vinyl mask just for headlights. Each sheet includes four pairs of fully detailed masks and four outline masks so you can improvise.

Item no. mdi120; $4.99.



FRESH PAINT

Michael Clark, Fairhope, AL

This wild-looking HPI Mitsubishi Eclipse body should come with the warning label: "Don't try this at home." Combining multiple effects such as flames, fades and checkers on one body often results in a technically impressive but overly busy look—but not this time! Mike pulled it off successfully. There's no question that this FasKolor-finished import is the hottest-looking Mits in Fairhope.

Do you have a sharp, uncluttered photo of your best paintwork? Send it in! Explain the types of paint, products and techniques you used to finish it. Be sure to include your full name and address and your email address if you're online. For information about sending electronic images, check out www.caraction.com. Send print or slide photographs to "Body Shop," RC Car Action, 100 East Ridge, Ridgefield, CT 06877, USA.

CONTACT THE BODY SHOP

Send your "Body Shop" questions and comments to Bob Hastings, bobh@airage.com.

SOURCE GUIDE

SPAZ-STIX (801) 661-8514; spazstix.com
HPI RACING (949) 753-1099; hpiracing.com.
PARMA/PSE (440) 237-8650; parmapse.com.
MDI RACING distributed by Schumacher USA (813) 889-9691; racing-cars.com.

Golden Horizons **Aluminum roll bar, chassis and center bulkhead** for Associated Nitro TC3

GOLDEN HORIZONS' (GH) NEW LIGHTWEIGHT LOWER CHASSIS PLATE for the Associated Nitro TC3 is machined out of solid, 3mm 7075 T6 sheet aluminum and anodized in your choice of bright blue or silver. The chassis is aggressively relieved under the radio-tray area and milled on the bottom to reduce its weight, but don't look for a big weight saving compared with the stock part; it weighs only 2 grams less. The chassis includes finned aluminum heat-sink mounts with flat-head screws that fit into countersunk washers recessed in the chassis plate's engine slots. To test the chassis, we installed it as part of a Nitro TC3 buildup for *RC Nitro* magazine. All the Associated kit parts fit properly, and the assembled car is rock-solid. We can't tell whether it's actually stiffer than a stock-chassis car, but it certainly isn't any less rigid.

We also used the project car to test GH's adjustable handle/roll bar. The Nitro TC3 has a plastic handle that makes it easy to hold the car with its wheels off the ground while you blip the throttle, but the stock handle isn't tall enough to act as a head-protecting roll bar for the engine. GH's aluminum replacement part is taller, and it's topped by a steel wire hoop that can be extended, trombone-style, to reach the body's roofline. A pair of setscrews holds the adjustment, and the entire hoop can be replaced, if necessary. The well-made piece fits just like the stocker.

GH's center bulkhead was also added. This part supports the drive shaft and is also home to the Nitro TC3's brake caliper, which rides on pressed-in steel pins. A separate cap captures the shaft bearing with two screws. The cap is grooved to hold the bearing, but the bulkhead is not; we'd prefer to see grooves in both parts, but we doubt that the bearing will budge.

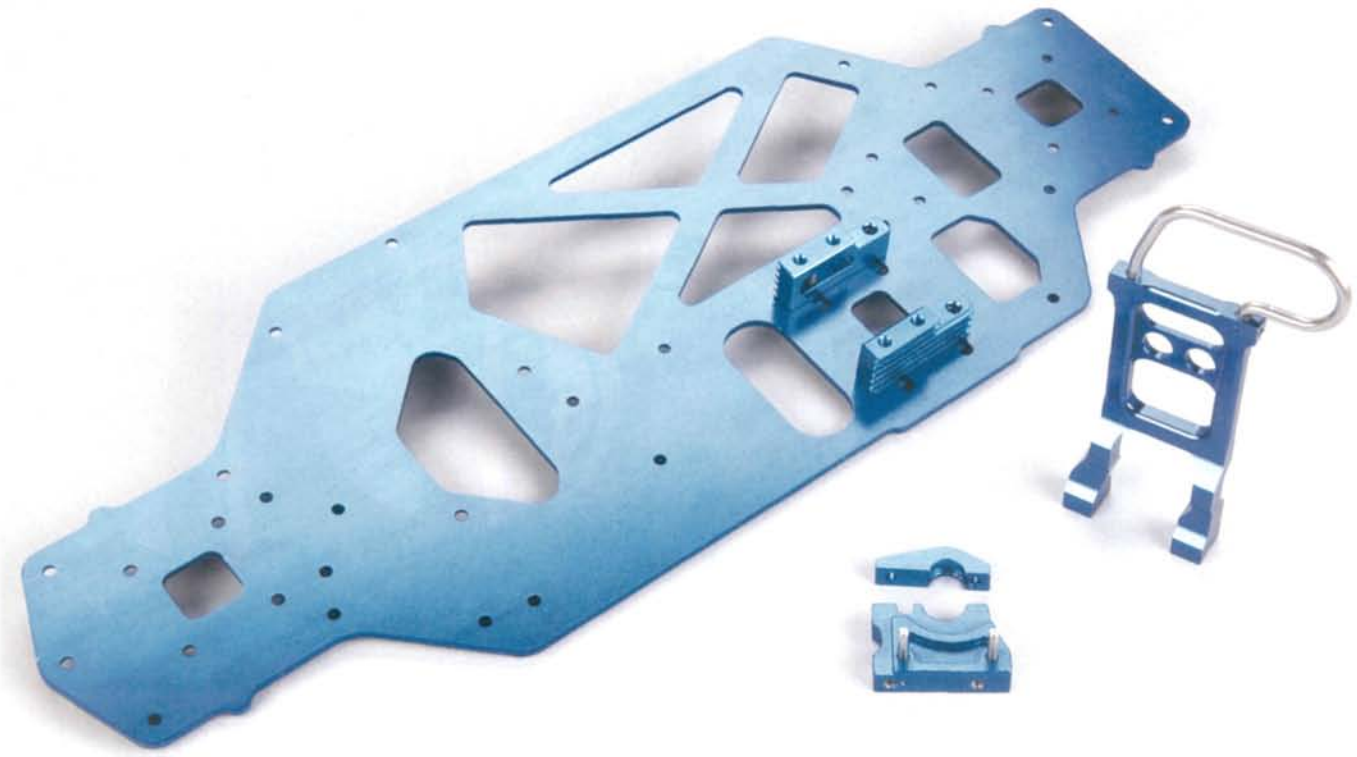
THE COBALT BLUE ANODIZING IS FLAWLESS

Each GH part can be purchased separately and added at any time, but you'll have to use the stock kit hardware (with the exception of the engine-mounting screws included with the GH chassis). The GH parts machining is excellent, and its cobalt-blue anodizing is flawless. Don't let the goofy name fool you; Golden Horizons TC3 parts are top quality.

3mm 7075 T6 chassis—item no. GH02410; $59.99.
Center bulkhead—GH02411; $21.95.
Chassis handle/roll bar—GH02419; $25.99.

Golden Horizons (604) 331-2526; ghhobby.com.

The finned engine mounts are included with the chassis, and the machine work on all the parts is flawless.



Xtreme Engineering **Work Station**

XTREME'S NEWEST WORK STATION is constructed of aluminum rod and 5mm plates and has a pair of telescoping arms and clamps to hold your car or truck in midair, so you can blip the throttle. The arms also allow you to rotate the car and hold it at any angle. The stand is sold unassembled; just bolt the plates to the poles using the four supplied button-head screws, slide the arms into the guides on the plate, and secure them with the knob bolts. The assembled stand is large enough to hold even the tallest monster trucks with wheel-spinning room to spare, but ladder-chassis trucks such as the Kyosho Mad Force and HPI Savage won't fit, and 1/8-scale buggies will fit only if you remove their chassis guards. Otherwise, just about anything with a flat chassis will fit the Work Station.

Tested with an OFNA Dominator and a Traxxas T-Maxx, the Work Station held up well, but wrestling the trucks into the stand was a hassle. We found the best method was to slip one arm out of the stand, attach it to the truck and then slip the arm back into the stand and slide out the other arm to meet it.

Work Station—item no. TNT-0060; $109.95.

Xtreme Engineering (218-847-5813); xtremeengineering.com. ■

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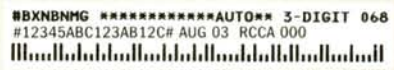

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BY GREG VOGEL

RCX @IMPORT REVOLUTION: CHICAGO

Although the official RC Expo (RCX) doesn't happen until May, RCX is already in full swing on a smaller scale with its appearance at auto shows, Hot Import Nights and Import Revolution events. These are the two most popular car shows on the import scene, so it's only natural that we demonstrate RC cars to the import enthusiasts who attend. The most recent Import Revolution (with RCX) was in Chicago, and thousands of spectators lined up to get into the popular event.

RCX teamed up with DuraTrax and Leisure Hobbies to put RC on display for the Chicago crowd. A huge RC on-road track was set up in the center of the car show, and Leisure Hobbies had a vendor booth for DuraTrax and Kyosho products. Spectators crowded around to get a look at the cars running on the tracks. This was also a "try-me" track; people from the crowd were invited to drive one of five DuraTrax Evaders. On the small Mini-Z track that was set up next to the hobby shop, spectators tried micro RC, and there was always a huge group of people around the DuraTrax Real Race simulators, too. The show was a big success, and it introduced RC to a bunch of potential RC drivers.

These events give just a sneak peek of what's to come at the main RC Expo event, which will be packed with energy, demos, girls, showcases, celebs and more. Check out rcx.com to see how you can get in on the action! ■

import REVOLUTION

DURATRAX

KYOSHO

Fashion models walked the walk on the runway and showed off the latest gear.

Many drivers showed off RC replicas of their full-scale cars.

The DuraTrax Real Race simulators were surrounded all night.

Kyosho set up a Mini-Z track that gave a constant stream of new drivers a chance to take the wheel.

Throughout the night, circles formed in front of the stage when the DJ was spinning, and spectators broke out their latest moves. I did a little move I call "just standing there checking out the ladies."

Everywhere you turn ... models!

RCX's Miss Becky was on hand to show off *RC Car Action* and *RC Nitro*. Miss Becky is also an RC car driver; she runs a light blue HPI Micro RS4 with "Hello Kitty" decals. Nice.

DuraTrax and Leisure Hobbies reps were on hand to promote RC. There were plenty of kits for sale, and they disappeared quickly.

The DuraTrax Evaders got a workout at the "try me" track. DuraTrax reps also demonstrated a Street Force and a Thunder Quake during the evening.